DOCTOR OF PHILOSOPHY

A multi-methods approach to explore the organisational level barriers and facilitators to the implementation of evidence-based guidance in primary care.

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DECLARATION

I confirm that this is my own work, it has not been previously accepted for a higher degree and the use of all materials from other sources have been properly and fully acknowledged.

Heather Camille Cassie

ABSTRACT

Aim: To investigate which characteristics of primary care organisations influence the translation of guidance into practice.

Methods: A three phase multi-method design. (1) A literature review exploring organisational change in primary healthcare organisations, focusing on knowledge translation; (2) Development of a dental team questionnaire measuring structure, culture and management; (3) A dental team questionnaire and case studies, to collect data on the structure, culture and management of dental practices along with self-report compliance data exploring the relationship between organisational characteristics and guidance compliance.

Key Results: A 'best-fit' framework approach was undertaken for the literature review. This identified the barriers and facilitators to the translation of guidance in primary care organisations. These were communication, team work, flexibility, prioritisation, collaboration, dissemination and expectations. Preliminary interviews with dental team members supported these findings and identified further practice characteristics to explore in the questionnaire. These additional themes were leadership, context and practice systems and learning.

A dental team questionnaire, incorporating the Dental Practice Organisational Measure (DPOM), along with questions to determine practice characteristics and compliance with key dental recommendations was developed, piloted and then disseminated to 400 dental practices. Questionnaire findings revealed no significant relationship between practice characteristics and compliance with Emergency Dental Care (EDC) or Drug Prescribing recommendations. However positive associations were observed between compliance with Oral Health Assessment and Review (OHAR) recommendations and having a Practice Manager as well as with whether a practice is fully NHS, fully private or offers a mixture of treatments. These findings were supported by case study data that identified leadership and context as key drivers in the translation of guidance. Regression models to explore the relationship between the variables in the DPOM tool compliance with EDC and OHAR recommendations also revealed some associations.

Conclusions: A multi-method approach, set within the context of General Dental Practice, was undertaken to explore which characteristics of primary healthcare organisations influence the translation of guidance. Integration of the findings suggest the emergence of two conceptual themes around the relationships and the structural and administrative aspects that exist within healthcare organisations. It may be that new guidance and recommendations should be tailored to incorporate these factors in order to facilitate knowledge translation and hence improve compliance with best practice recommendations.

EXECUTIVE SUMMARY

1. Introduction

Ensuring that health services are safe and harm free is the cornerstone of the NHS. However, patient harm is rarely linked to deliberate wrong-doing or the incompetency of healthcare professionals[1]. Rather it is considered to be the result of systems-level failures[2]. One means of improving the quality of healthcare is through the development of evidence based guidance and translating this into routine clinical practice[3]. However, a consistent finding is that the translation of research findings is unpredictable and can be a slow and haphazard process[4].

Current evidence suggests that while change is possible, research must adopt a comprehensive approach at multiple levels (e.g. individual, team and organisational)[5]. A systematic review conducted in 2008 demonstrated that individual factors, based on social cognitive theories, account for about 30% of the variability in health behaviour[6], leaving a significant gap which may be attributable to organisational factors amongst others. The purpose of this study was to understand this possible impact of organisational factors.

2. Aims

The aim of this thesis was to investigate which organisational characteristics of primary healthcare organisations influence the translation of guidance.

Key research question:

"What organisational characteristics of primary care organisations influence the translation of guidance into practice?"

Specific objectives were to:

(1) explore structure, culture and management in primary care organisations

(2) develop a self-report questionnaire to explore structure, culture and management within general dental practices

(3) determine which organisational characteristics are most influential on knowledge translation.

3. Methods

The study was underpinned by the Receptive Healthcare Contexts for Change (RHCC) framework developed by Pettigrew, Ferlie and McKee[7] derived from their studies of strategic service change in the NHS. This framework explores the notion of 'receptivity' to change and highlights the interplay of many factors, including the content, context and process of change.

Phase 1: A review of the literature exploring structure, culture and management of primary care organisations. (Objective 1)

A review of the literature surrounding evidence synthesis methods was conducted to determine the most appropriate literature review methodology. Based on this a 'best fit' framework approach was taken[8]. This method offers a structured approach to organising and analysing data and allows the identification of a priori themes. The purpose of the literature review was to explore structure, culture and management through the identification of organisational barriers and facilitators to the translation of guidance.

Phase 2: Development of a self-report questionnaire to explore structure, culture and management of general dental practices. (Objective 2)

Development was informed through two stages:

(i) Dental team interviews

Interviews investigated how the organisational characteristics of dental practices in Scotland influence the translation of guidance. They explored dental team members' views and awareness of guidance and identified the organisational barriers and facilitators to the translation of guidance. Semi-structured telephone interviews were conducted with a range of team members from four practices. A topic guide was developed based on the literature review findings. Interviews were recorded, transcribed and a framework approach[8] to qualitative data analysis was adopted.

(ii) Questionnaire development and piloting

The literature review and interview findings were used to develop a dental team questionnaire to explore structure, culture and management in dental practices. A review of organisational instruments was undertaken to identify an appropriate tool to measure this. The questionnaire also included questions to

determine compliance with three topics of dental guidance. The three topics of guidance covered were the Scottish Dental Clinical Effectiveness Programme's (SDCEP) Emergency Dental Care Guidance (EDC)[9], Oral Health Assessment and Review (OHAR)[10] and Drug Prescribing (DP) for Dentistry[11]. These three topics of dental guidance were deliberately selected based on the differing dental contexts and team members they target. Recommendations within the EDC guidance specifically target front-line members of the dental team such as Receptionists and Practice Managers. OHAR requires input from the whole dental team to fully comply with the recommendations and DP specifically targets the individual dentists' prescribing behaviour. Once developed the questionnaire was piloted in four dental practices.

Phase 3: Questionnaire Survey and Dental Practice Case Studies to determine which organisational characteristics are the most influential on the translation of guidance. (Objective 3)

(i) Questionnaire Survey

A random sample of 400 dental practices was identified using the Practitioner Services Division's Management Information Dental Accounting System database[12]. Practices were randomised at practice level and then at individual dentist level allowing one dentist per practice to be identified as the contact. Dental team members were encouraged to participate with the opportunity to receive two hours of Continuing Professional Development (CPD).

Questionnaire data was managed using SPSS version 20, and latterly version 22. Summary descriptives to check data distribution and any disparities in the data were produced. The internal consistency of the instrument measures were tested using Cronbach's alpha. Independent t-tests were used to assess differences in responses for participants reporting compliance with guidance recommendations compared to those who reported non-compliance. Chi-square tests assessed any relationship between practice characteristics and compliance. Where appropriate, logistic regression models were used to assess the relationship between the organisational instrument items and compliance with the three dental topic areas. Statistical significance was defined as p-value<0.05 and based on two-sided tests.

(ii) Dental Practice Case Studies

Following completion of the questionnaire, participating dental practices were selected to participate in the case studies. A pragmatic approach to practice selection was adopted, which included practice characteristics and a willingness to participate. All team members were invited to participate in the case study which involved semi-structured interviews, informal discussions and practice observations. Interviews were conducted face-to-face or by telephone and were audio recorded and transcribed in full. During the practice visit, observational field notes of the practice environment, practice systems, communication and team member interaction were taken. Interview transcripts and observational field notes were analysed using the framework approach[13].

4. Results

Phase 1: A literature review exploring structure, culture and management of primary care organisations.

Fifty-six papers were included in the literature review. Study settings ranged across primary care with the majority being set within general practice. During the review process the RHCC model was developed to better accommodate the barriers and facilitators identified from the literature. The key concepts that emerged from the review were communication, teamwork, flexibility, prioritisation, collaboration, guidance dissemination and expectations.

Phase 2: Development of a self-report questionnaire to explore structure, culture and management of general dental practices

(i) Dental team interviews

Fourteen telephone interviews were undertaken with a range of team members from four practices. All practices were independently owned, one fully private, one fully NHS and two offering a mixture of treatments. Findings identified distinct differences and clear themes emerged across practices. The two overarching themes were leadership and communication. The following themes also emerged as influencing the translation of guidance in dental practices:

- Teamwork, including decision making
- Context, including external factors such as resources
- Collaboration with other organisations and patients

- Guidance dissemination, both internally within practices and externally
- Practice systems and learning, including innovations, training and performance feedback

(ii) Questionnaire development and piloting

An initial review of the literature identified no one existing instrument as a perfect fit. However, through a mapping exercise which included factors such as ease of completion by the whole dental team and previous use within a UK setting, the Organisational Climate Measure (OCM) instrument[14] was decided upon, with some adaptation. This was modified and incorporated into a questionnaire which also included questions to determine compliance with the three topics of dental guidance and demographics.

The questionnaire was piloted in four dental practices to test its content validity. Thirty-five questionnaires were completed. Feedback was received using a range of formats, including telephone interviews, an informal focus group and practice visits with participant and group interviews. Feedback focussed on re-wording to make questions more relevant to the dental practice structures that exist in Scotland. Feedback was also received about the distribution of the questionnaire and it was suggested that participants be offered CPD as an incentive. Based on this, the questionnaire was adapted and distribution methods for the full survey revised.

Phase 3: Questionnaire survey and dental practice case studies to will determine which organisational characteristics are the most influential on the translation of guidance into practice

(i) Questionnaire Survey

Four hundred practices were sent questionnaires. Six practices contacted the researcher to opt out and three packs of questionnaires were returned to sender. In total 349 completed questionnaires were returned from team members across 96 practices, giving a practice response of 25%. The questionnaire was completed by a range of team members. The majority of participants reported that their practice was independently owned (88%), the remaining were corporately owned (6%) or part of the salaried service (7%).

Most reported that their practice offered a mixture of NHS and private treatment (77%), 22% were fully NHS and <1% were fully private. The majority reported having a computerised patient management system in their practice (82%) and just over half (56%) reported having a practice manager.

Compliance with key recommendations from the three topics of guidance was variable (Table i). Participants were considered compliant if they reported to always following best practice for the recommendations for each topic. Table ii shows the practice characteristics of individuals who were fully compliant.

Table i: Compliance with SDCEP Guidance *(Based on valid responses and rounded to nearest %)*

Guidance Topic	Compliant	Non-Compliant
Emergency Dental Care (EDC)	141 (41%)	200 (59%)
Oral Health Assessment & Review (OHAR)	63 (19%)	273 (81%)
Drug Prescribing (DP)	12 (4%)	317 (96%)

Table ii: Characteristics of Compliant Practices *(Based on valid responses and rounded to nearest %)*

	EDC (n=141)	OHAR (n=63)	DP (n=12)
Has a Practice Manager	80 (57%)	45 (73%)	6 (50%)
Use a Computerised System	120 (85%)	56 (89%)	10 (83%)
Independently Owned	119 (84%)	56 (89%)	12 (100%)
Corporate Practice	8 (6%)	5 (8%)	0 (0%)
Salaried Service	14 (10%)	2 (3%)	0 (0%)
Fully NHS	32 (23%)	5 (8%)	0 (0%)
Fully Private	1 (<1%)	1 (2%)	0 (0%)
A Mixture of NHS/Private	108 (77%)	57 (90%)	12 (100%)

Chi-square tests revealed no significant relationship between the practice characteristic variables and compliance with the EDC or DP recommendations. A positive association was observed between OHAR compliance and having a

practice manager, $\chi^2(1,N=334)=7.928$, $p<0.01$ and whether a practice was fully NHS, fully private or a mix, $\chi^2(2,N=335)=10.049$, $P<0.01$.

Logistic regression models were used to assess the relationship between the instrument items and compliance with the EDC and OHAR recommendations. With the exception of integration (Coef. 0.89; p=0.03; 95% CI 0.11 to 1.67)) no other items were predictive of compliance with the EDC recommendations. The higher the score for integration the more likely a practice was to be fully compliant with the EDC recommendations. The results for the OHAR recommendations suggest welfare (Coef. -0.88; p = <0.01; 95% CI -1.46 to -0.30), pressure to produce (Coef. -0.77; p=0.05; 95% CI -1.53 to -0.01) and guidance prioritisation (Coef. -0.97; p=0.04; 95% CI -1.91 to -0.03) were predictive of compliance, with lower scores suggesting a greater probability of full compliance. The results also suggest that fully private practices are more likely (Coef. 1.57; p=0.02; 95% CI 0.25 to 2.89) and fully NHS practices are less likely to comply with the OHAR recommendations (Coef. -1.36; p=0.04 95% CI -2.63 to -0.09) when compared to those offering a mixture of treatment.

Only 12 respondents were fully compliant with the DP recommendations. All 12 were independently owned practices offering a mixture of NHS and private treatments. Due to this lack of variation across variables, logistic regression was not appropriate. A comparison of responses across the instrument items revealed a significant difference for pressure to produce (p=0.04). Compliant respondents reported lower pressure to produce scores than those who were not compliant. No other significant differences in responses were observed.

(ii) Dental Practice Case Studies

Two of five practices contacted agreed to participate in the case studies. One was an urban, independently owned practice with one-part time dentist and one nurse. The other was a rural, corporately owned practice with two dentists, three nurses, a receptionist and a part time hygienist and Practice Manager. Neither practice was fully compliant with any of the three dental topic areas.

The key themes to emerge as influential on knowledge translation were leadership and context. Leadership stemmed from multiple roles and appeared to both positively and negatively influence the translation of guidance. Context incorporates the patient context, including attitude and lifestyle, as well as practice context, including geographical location, premises, team size and ownership. The context of the case study practices was very different, but in both cases it appeared to influence how they prioritised and justified how they followed guidance recommendations.

(iii) Integration of Findings

Key findings from the survey and the case studies were integrated using a cross comparison method. Although, leadership and context emerged as strong themes from the case studies, only two of the variables associated with leadership and context in the organisational instrument were significant in predicting compliance. These were welfare and guidance prioritisation and this was only in relation to the OHAR recommendations. Welfare relates to the extent to which a practice values and cares for team members and guidance prioritisation refers to the extent to which new guidance and recommendations are prioritised by the team. These variables, however, focussed on the leadership role of the principal dentist, so it may be that other leadership roles are influential. This theory is supported by the positive association observed between OHAR compliance and having a Practice Manager as well as the interview and observational data. In addition, there was a positive association observed between OHAR compliance and whether a practice was fully NHS, fully private or a mixture, relating to the context within which it is operating.

5. Discussion

This study has used multiple methods to explore the characteristics of healthcare organisations that may influence the translation of guidance into practice. The findings of the literature review and preliminary dental team interviews identified practice level barriers and facilitators which may influence knowledge translation. These were focussed around leadership, team work, communication and collaboration as well as more contextual factors such as the practice environmental context, the expectations of both patients and

healthcare professionals, practice systems and how guidance is disseminated and prioritised both internally and externally.

The questionnaire findings suggest that the 'integration' is associated with compliance with the EDC recommendations. This suggests the more integrated a team is, i.e. effective team working and collaboration, the more likely they are to comply. This is plausible given that EDC recommendations require involvement from a range of team members. That said, integration was not predictive in terms of compliance with the OHAR recommendations. This raises the question of what it is about these two guidance topics that are different, perhaps in terms of which roles they target.

The finding that fully private practices are more likely to comply with OHAR recommendations was supported by the interview data. Interviews with team members working in private practices suggested that fully private practices often have more time to spend with patients and that perhaps private patients have higher expectations, expecting enhanced levels of care. Another interesting finding was that those compliant with the Drug Prescribing recommendations reported lower 'pressure to produce' scores. This relates to the level of pressure that team members face to meet targets and their pace of work. The findings suggest that those reporting less pressure, working under less time constraints and experiencing a more relaxed pace may be able to treat patients effectively when they present rather than using antibiotics as a 'stop gap' until a future appointment can be made.

In its original use, albeit in a very different setting, the authors organise the variables contained in the OCM instrument into four distinct quadrants – human relations, internal processes, open systems and rational goals. This is based on the Competing Values Model[15] and is a useful approach when reflecting on how best to implement the findings[14]. Based on this approach, given the different context and objectives of this study it could be argued that the findings map under two conceptual headings, one around the human relations aspects or relationships that exist in healthcare organisations and the other encompassing the structural and administrative aspects of healthcare organisations.

One approach for the future may be to explore ways of tailoring guidance recommendations and implementation strategies. This would allow differences in relationships and structural and administrative processes to be accounted for. This could be through the use of implementation tools such as flowcharts or algorithms that healthcare professionals can use to determine the best ways to implement guidance within their particular context. It could also be through the use of tailored practice based training to facilitate the translation of guidance by encouraging team members to develop tailored methods to implement recommendations, hence encouraging ownership and 'buy in' from dental teams. Although undertaken within dentistry these findings may be transferrable to other healthcare settings. In particular pharmacy and optometry operate within similar settings. Future work could explore these settings using a similar methodology to test the transferability of these findings.

6. Conclusions

This study collected data using a number of methods: literature review, interviews, questionnaire and case studies. The literature review and interviews identified key themes to address in the questionnaire-based survey. Integration of the questionnaire and case study findings, along with findings from this preliminary work suggest the emergence of two conceptual themes. One focusing on the relationships that exist within healthcare organisations and another encompassing the structural and administrative aspects that exist.

7. Importance to NHS/Possible Implementation

This study has demonstrated a multi-method approach to exploring the organisational characteristics of healthcare organisations that influence the translation of guidance. The results highlight the challenges of measuring organisational factors quantitatively and the complexities around guidance implementation given the varying contexts that exists in primary healthcare.

One key factor to emerge from this study is the possibility of tailoring guidance to different practice contexts. These findings will be fed into the guidance development process through links with the Scottish Dental Clinical Effectiveness Programme (SDCEP). An additional finding to emerge from this work is the potential use of CPD as an incentive to healthcare professionals and

how this can be used to encourage healthcare organisations to reflect upon their current practice using individualised feedback and developmental plans. Further work could be done to explore whether practices take forward their developmental plans to implement change and whether this methodology could be utilised in healthcare settings other than dentistry.

8. Key Messages

KEY FINDINGS

- Dental guidance is not being fully implemented into routine clinical practice.
- Compliance varies across practice settings, structure and by guidance content.
- The findings of this study identified two conceptual themes that may influence the translation of guidance: (1) Relationships and (2) Structure and Administration.
- Tailoring guidance recommendations and implementation strategies may facilitate Knowledge Translation and hence improve quality in health care.

KEY IMPLICATIONS

- The use of multi-methods can greatly enhance research findings. In this study practice interviews and observations provided an in-depth understanding of the quantitative findings.
- The Dental Practice Organisation Measure (DPOM) has the potential to be used as a reflective practice development tool by NHS Education for Scotland. This quality improvement tool can be used by dental teams to measure, reflect and effect change in their current practice.
- A mechanism is now in place for the use of verifiable CPD to facilitate encourage use of the DPOM in practice.
- The findings of this work will be fed into the SDCEP guidance development process in order to shape the guidance development process and inform the targeting of

FURTHER RESEARCH

- Using case study methodology explore organisational characteristics across other primary care settings (e.g. Optometry and Pharmacy) identifying similarities and differences in order to develop future KT interventions.
- Use of the DPOM as a practice development tool to measure quality improvement in general dental practices.
- Using trial methodology explore the impact of using CPD as an incentive to encourage participating in health services research.

CHAPTER 1: INTRODUCTION

1.1 Background

Ensuring that health services are safe and harm free is the cornerstone of NHS healthcare. A House of Commons Select Committee report published in 2009 stated '*The extent of medical harm is substantial, even on a conservative estimate, and much is avoidable'*[1]. However, apart from a minority of high profile cases, patient harm is rarely linked to deliberate wrong-doing or the incompetency of healthcare professionals[1]. Rather it is considered to be the result of systems-level failures[2]. Adopting a patient-focused approach to improving quality in health and healthcare was central to the Scottish Government's Action Plan 'Better Health Better Care'[16]. It continues to be at the forefront of Scottish government policy as evidenced by the NHS Scotland Strategy for 2012-2017[17]. This most recent strategy focuses on the need to improve health by influencing policy and practice, and highlights that although health in Scotland is improving it is not improving as fast as some of its European neighbours[17].

This need to drive forward healthcare improvements through the use of robust research findings is supported by not only policy but also the literature[3,18-20]. One means of improving the quality of healthcare is through the development of evidence-based guidance and translating this guidance into routine clinical practice. Evidence-based guidance aims to reduce inappropriate variations in practice and strives to promote the delivery of evidence-based healthcare[21].

Despite this, a consistent finding in health services research, is that the translation of research findings into routine practice is unpredictable and can be a slow and haphazard process[22]. Furthermore, studies in the USA and Netherlands have shown that 30-40% of patients do not receive treatments of proven effectiveness and that 20-25% of patients receive care that is not needed or is potentially harmful[23-25]. A review of quality of care studies from UK primary care concluded that "*in almost all studies the process of care did not reach the standards set out in national guidelines or those set by the researchers themselves*[22]."

Current evidence suggests that while change is possible, research must adopt a comprehensive approach at multiple levels (e.g. individual, team and organisational)[5]. A systematic review conducted in 2008 demonstrated that individual factors, based on social cognitive theories, account for about 30% of the variability in health behaviour[6], leaving a significant gap, some of which may be attributable to organisational factors. A study conducted in 2003 exploring healthcare redesign, highlighted that while most quality improvement interventions work some of the time, they rarely live up to the claims made for them in the early stages. The findings suggested that success is based upon a number of factors which include not only how the change is implemented but also the specific context into which it is being implemented[26].

In 2012, Birken and colleagues proposed that this gap between evidence and practice can only be closed if healthcare organisations begin to adopt evidence based practices[27]. However even implementing simple healthcare innovations has proven to be challenging, with the implementation rates of quality improvement initiatives at less than 50%[27,28] .

1.2 Implementation Science

Implementation science is the study of methods to promote the integration of research findings and evidence into healthcare policy and practice. It seeks to understand the behavior of healthcare professionals and other stakeholders as a key variable in the sustainable uptake, adoption, and implementation of evidence-based interventions.

Over the last decade there has been an increased recognition of the need to identify the theoretical base of implementation strategies with an increased interest in the use of models and frameworks to gain an insight into the mechanisms surrounding the implementation of evidence. As a result, there has been a growth in implementation studies adopting theories from a range of disciplines, one of which is organisational theory.

1.3 Organisational Culture

Poor implementation of quality improvement initiatives may be due to the large organisational changes required[28]. Organisational factors have been investigated in the context of large organisations, but less so for smaller primary care organisations such as general medical and dental practice.

One contextual factor that exists within primary care organisations is the organisational culture. John Harvey Jones stated in 1993 that *"It is impossible to change organisations which do not accept the dangers of their present ways of doing things[29]".*

Many definitions of organisational culture exist[30-33]. Examples include: "*the way we do things round here[33]"*, as well as Schein's description of an organisation's culture as "*the pattern of shared basic assumption – invented, discovered or developed by a given group as it learns to cope with its problems of external adaptation and internal integration...[34]"*.

A consistent finding across most definitions is that 'organisational culture' relates to multiple aspects of what is shared among people within the same organisation[35] and this may include factors such as beliefs, behaviour, routines, and traditions amongst others.

The terms 'organisational culture' and 'organisational climate' are often confused and used interchangeably in the literature[31], hence it is important to differentiate between them. Scott et al. effectively describe the difference as: climate is based on perception of policies, procedures and practices, whereas organisational culture represents the underlying assumption and values of the organisation[30].

Over the last decade there has been a huge emphasis placed on the need to change organisational culture within the NHS[36-38] and recognition that there is a need to change organisational culture alongside structural reform in order to achieve improvements in healthcare performance[39,40]. The notion that organisational culture can affect the performance of healthcare organisations

rests upon certain assumptions; that healthcare organisations, units or groups have identifiable cultures, that culture is related to performance and that a culture can be altered to impact upon performance. As stated by Konteh, "*Culture is therefore a lens through which an organisation can be understood and interpreted*[41]*".*

1.4 General Dental Practice in Scotland

In dentistry, whilst it is known that the translation of evidence is variable, understanding how to change this is limited[42]. In addition, little is known about the organisational culture in general dental practices in Scotland and hence the impact this may have. Dental practices are mainly small, privately owned organisations which contract with the NHS to provide NHS treatment. They share common features with other primary healthcare organisations, such as general medical practices, pharmacies and optometry services, and they often comprise a small multidisciplinary team, with a range of skills and professionals, working to improve the healthcare of patients. These small organisations are located in highly varied settings ranging from single-handed premises to larger corporate groups, and are in rural, urban and sometimes remote settings. They are generally made up of multiple stakeholders, often with hierarchical structures and management systems all offering varying packages of complex care. These characteristics make them particularly challenging for quality improvement and knowledge translation initiatives.

Dental services are delivered with input from a wide range of potential team members including; dentists, hygienists, dental nurses, receptionists, practice managers, technicians among others. Each has a key role to play in the delivery of patient care. General Dental Practitioners (GDPs) are independent contractors who although working under existing NHS arrangements, treat children and adults under a hybrid capitation and continuing care arrangement, supported by an item of service fee structure. While some GDPs undertake only private work, many undertake a mixture of both private and NHS treatments. In dentistry change is imposed by the government and through general public opinion[43] while dental specific guidance is provided for the profession by the Scottish Dental Clinical Effectiveness Programme (SDCEP). SDCEP provide

user friendly evidence based guidance to support dental teams to provide high quality healthcare, which is safe, effective and patient centred[44].

Currently there is uncertainty about the precise impact that organisational factors may have on the translation of evidence based guidance within general dental practices or indeed primary care organisations in general. Consequently, it is not easy to design or implement strategies to address them. Given the complexity of this field it is likely that a flexible approach comprising both qualitative and quantitative methods is likely to result in richer and more in-depth findings[45].

1.5 Mixed Methods

This thesis aimed to address this uncertainty by using a multi-method approach to explore the impact that organisational and team level factors have on the translation of guidance. Using a mixture of research methods is a developing field. By definition, 'mixed methods' is a procedure for collecting, analysing and integrating both qualitative and quantitative data at some stage within the research process within a single study, in order to gain a greater understanding of the research question being studied[46]. When used in combination, qualitative and quantitative methods can complement each other and can result in a more robust analysis, benefitting from the relative strengths of each[46].

The approach taken in this study involved distinct phases of qualitative and quantitative research methods, with the findings from each phase informing the next. Key findings from each of the qualitative and quantitative aspects of the study were then integrated to produce an overall insight in order to address the research question. This design is comparable to that described within the mixed methods literature as 'sequential explanatory design'[47].

1.6 Aim

The aim of this thesis was to investigate which organisational characteristics of primary healthcare organisations influence the translation of guidance into practice

1.7 Research Question and Objectives

The key research question is:

'What organisational characteristics of primary care organisations influence the translation of guidance into practice?'

This has been classified into three specific research objectives:

(1) To explore the structure, culture and management in primary care organisations.

(2) To develop a self-report questionnaire to explore structure, culture and management within general dental practices.

(3) To determine which organisational characteristics are most influential on knowledge translation.

The focus of this study was explicitly applied: how do organisational factors affect the uptake of clinical guidance in dental practice? The work intended to directly inform the guideline dissemination process of the major dental guideline producer in Scotland, the Scottish Dental Clinical Effectiveness Programme. The PhD therefore explored the implementation of guidance, with a view to identifying the organisational level barriers and facilitators which may influence this, rather than to explore the broader theoretical literature on context, or quality improvement.

The study is underpinned by the Receptive Healthcare Contexts for Change (RHCC) model developed by Pettigrew, Ferlie and McKee in 1992[7]. This model was developed through their exploration of strategic service change in the NHS and is one of very few empirical studies exploring change in the NHS. The study investigated whether there was evidence of variability between health authorities, using case study methodology across eight district health authorities. Variation was identified and, in order to make sense of this variability, the terms 'receptive' and 'non-receptive' contexts to change were introduced. Based on these findings the model was developed. It explores this notion of 'receptivity' to change and highlights the interplay of many factors, including the content of any proposed change, the context and the process of

change and provides a systematic way of unravelling how the specific features of any proposed behavioural or cultural change may affect the translation of guidance into practice[7]. The RHCC was selected a priori as an exploratory lens through which to explore the organisational level barriers and facilitators to the translation of guidance. In particular, its focus on the context of change provided an opportunity to explore the contextual complexities that exist within the delivery of primary health care and specifically dental care.

Using the RHCC as an initial guiding framework this research was conducted in the following three phases:

Phase 1

In order to meet Objective 1, specifically to explore the structure, culture and management in primary care organisations, two reviews were undertaken. Firstly, a review of evidence synthesis methods was conducted to determine the most appropriate synthesis methodology to use for the review. Following this, a literature review was undertaken to explore structure, culture and management through the identification of the organisational barriers and facilitators that exist in relation to the translation of guidance.

Phase 2

To meet Objective 2, which was to develop a self-report questionnaire to explore structure, culture and management within general dental practices, semi-structured interviews were conducted with dental practice team members, to specifically investigate how the organisational characteristics of dental practices influence the translation of guidance. Based on the findings of the literature review and interviews a dental team questionnaire was developed and piloted to explore structure, culture and management in dental practices.

Phase 3

In order to meet Objective 3, to determine which organisational characteristics are most influential on knowledge translation, a dental team questionnaire and dental practice case studies were conducted. These findings were integrated

using cross comparison to identify which organisational characteristics are most influential on knowledge translation.

1.8 Ethical Review

Ethical review was sought by the East of Scotland Research Ethics Service in November 2012. Full ethical review was not required. Research and Development approval was conducted through Tayside Medical Science Centre (TASC) who confirmed R&D approval was also not required.

1.9 Structure of Thesis

The thesis will be split into eight chapters: an introduction, six research sections and a general discussion and conclusions section. Each research chapter is somewhat self-contained, detailing aims, methods, results and a brief discussion, however all chapters come together to address the overall aim of the thesis. The final chapter brings together the thesis findings and provides an overall discussion and general conclusion.

In this first chapter the background to the study has been outlined. The main aim of the thesis has been presented, followed by the three specific research objectives and how the study was conducted in order to meet these objectives.

Chapter 2 describes a review of evidence synthesis methods used within health services research, providing an introduction, a critique of the more prominent methods and a discussion around quality appraisal and sampling. This review identified the methodology used to conduct a literature review exploring structure, culture and management in primary care organisations in relation to the translation of guidance, which is presented in Chapter 3. These findings address the first research objective.

Chapters 4 and 5, address research objective 2, and describe the process undertaken to develop a dental team questionnaire. Chapter 4 describes interviews undertaken with dental team members exploring the literature review findings in greater depth and within the context of dental practices. Chapter 5

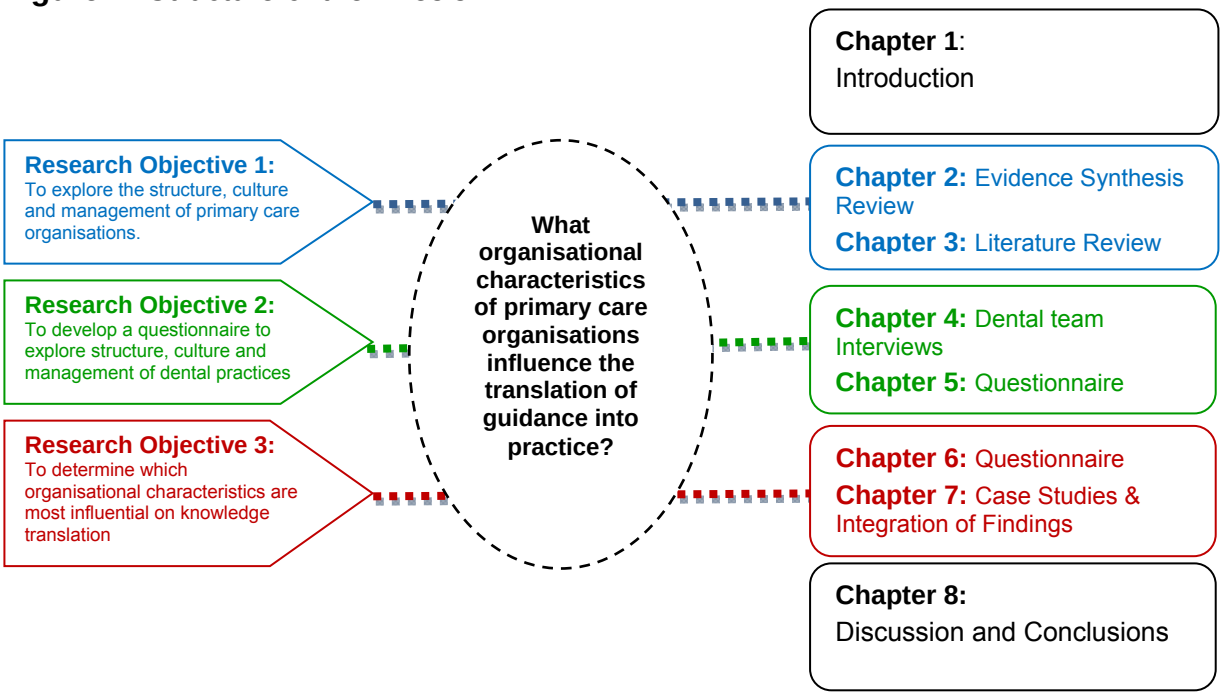
describes the process of taking the findings from the literature review and dental team interviews to develop and pilot a dental team questionnaire.

To address the third research objective, Chapter 6 presents the dental team questionnaire. Chapter 7 presents the dental practice case studies and the integration of questionnaire and case study findings.

Lastly, Chapter 8 provides an overall discussion of the findings, discussing each research objective in turn, within the context of the overarching thesis aim, and the implications of these findings. It includes a discussion of the strengths, contributions and possible impact of this piece of work. This final chapter also details the study's limitations, recommendations for future research, possible implementation and its potential importance and impact on the NHS.

The overall aim and objectives and how these are addressed in the thesis are represented diagrammatically in Figure 1.

Figure 1: Structure of the Thesis



CHAPTER 2: A REVIEW OF EVIDENCE SYNTHESIS METHODS IN HEALTH SERVICES RESEARCH

2.1 Introduction

In order to identify an appropriate approach for a literature review exploring structure, culture and management in primary care organisations in relation to the translation of guidance, a review of key evidence synthesis methods used within health services research was undertaken. This chapter reports this review. It provides a background to the synthesis of evidence and the use of theoretical frameworks in health services research, setting the context for the literature review. It explores prominent evidence synthesis methodologies and theories, assessing their relative strengths and weaknesses, and gives particular consideration to their suitability for use when exploring the literature associated with structure, culture and management in primary care organisations.

2.2 Evidence Synthesis - The Background

Evidence synthesis is the term used to describe the 'bringing together' of research evidence on a particular topic. It can be interpreted in a number of ways. It may be the collection, analysis and synthesis of both quantitative and qualitative data in a single study or series of studies[46] or it may be the synthesis of findings from multiple studies, be it qualitative, quantitative or a mixture of both. This review focuses on the synthesis of findings from multiple studies.

Traditionally systematic reviews of randomised controlled trials have been considered to be the 'gold standard' of evidence synthesis[48]. Over the last twenty years with evidence based medicine (EBM) coming to the forefront of the health service, healthcare professionals are increasingly reliant upon the literature to inform their decision making processes[49]. During this time there has been an increasing recognition of the need to review and synthesise evidence to answer questions relating to the implementation of interventions shown to be effective in experimental contexts and there has been an awareness, particularly by policy makers and practitioners, that all forms of evidence need to be optimised, with a need to incorporate these using robust methods[50].

Despite its 'gold standard' status, Cochrane systematic reviews have been criticised by some for the lack of inclusion of qualitative findings[51-53]. Indeed, it has been agreed that integrating qualitative research into systematic reviews could enhance its utility and impact[52]. Dixon-Woods highlighted this in her 2001 paper stating that it was 'intuitively obvious' that a Cochrane review exploring communication with children and adolescents about their cancer, could have benefitted from the inclusion of qualitative data. Perhaps as a result of this, few conclusions were reached[54]. Cochrane has since gone someway to addressing such criticisms with the formation of the Cochrane qualitative methods network. This group focuses on the methods and processes involved in the synthesis of qualitative evidence and the integration of qualitative evidence within Cochrane reviews. From 2012 their remit was extended to include methods for undertaking systematic reviews of implementation[55].

Despite such methodological advancements in this field, it is widely agreed that making sense of large bodies of evidence, drawn from wide ranging research studies that have used varying methods, can be complex and challenging[56]. Ensuring that the product of any synthesis is considered robust and legitimate by policy makers, practitioners and the people for whom it is intended to benefit is thus crucial.

There are, nonetheless, arguments against synthesising different forms of research evidence, particularly the inclusion of qualitative studies. These are based on theories that underpin qualitative research and, in particular, the relationship between the researcher, the data and interpretation. Qualitative researchers tend to emphasise the importance of their relationships with research participants and take into account the context where the data were collected. One of the problems of synthesising qualitative findings and, especially the synthesis of both qualitative and quantitative findings, is that rather than setting out to test a clearly defined hypothesis, qualitative research generally focuses on generating theory or providing rich analytical descriptions of phenomenon[57]. This is however, also one of its strengths, providing an opportunity to access sensitive, rare and difficult contexts. It could, therefore, be argued that synthesising these data could further increase the value of findings

gathered from primary studies, thereby generating an extremely rich source of evidence. Britten and colleagues argue that qualitative synthesis is possible and has the potential to enhance and provide clearer and more succinct findings for practitioners and policy makers[58].

Some of the earliest writings on methods for synthesising research were by Noblit and Hare[59]. They described methods for synthesising ethnographic research and suggested an approach for synthesising evidence when purely integrating it would not be appropriate[60]. They distinguished between 'integrative' and 'interpretive' synthesis of evidence. They suggested that integrative synthesis is the combination or amalgamation of data where the findings are aggregated for analysis. They describe interpretive synthesis as an inductive and interpretation process which involves synthesis to identify concepts at a higher theoretical level[59].

Dixon-Woods and colleagues have taken this description a step further[50] suggesting that integrative synthesis can be used when the aim is to summarise the data and where the concepts or themes under which to categorise the data is well defined. They provide an example of this as the synthesis of the impact of educational interventions on the uptake of flu immunisation in older people. It was possible to identify the key themes in the early stages of this study and, therefore, data could be extracted and categorised under these headings. On the other hand, they define interpretive synthesis as a more conceptual process where the output is a theory rather than the aggregation of data. An example of this is Dixon-Wood's own study looking at access to healthcare by vulnerable groups. In this study 'critical interpretive synthesis' (CIS) was developed and used to identify a higher level construct of 'candidacy' to describe how people's eligibility for healthcare is determined between themselves and the health service provider[61].

This view is supported by Popay and colleagues who suggest that different methods of evidence synthesis can be located along a continuum, from quantitative approaches that involve the pooling of findings from multiple studies e.g. Cochrane Reviews, to qualitative approaches involving a more

interpretive approach, e.g. CIS[56]. It is important, however, not to focus too much on this dichotomy as each approach is not completely distinct, with both interpretive and integrative methods being used to synthesise both forms of evidence[50].

It is clear, that evidence synthesis is an emerging and complex field. In recent years there has been a rapid increase in the number of synthesised qualitative studies being undertaken and in the development of new synthesis methods[62-65]. There are many aspects of the process that remain ambiguous, however despite these, it is clear that these evaluations are crucial not only in terms of applications at an organisation and practice level but also in terms of informing policy. There is no one correct way of approaching evidence synthesis and the process is constantly evolving and becoming more refined as a result, particularly, in response to the challenge of evaluating complex interventions in varying healthcare contexts. With this in mind, the method of synthesis must be appropriate to the research being synthesised[66,67], and there must be a clear rationale for why the synthesis is being undertaken. It is also crucial to identify how much confidence should be placed in the findings of such syntheses[62], albeit this is challenging.

This chapter will now go on to explore in more detail some of the more prominent evidence synthesis methods used in health services research, focussing on those with the potential to incorporate both qualitative and quantitative evidence. This is, however, not an exhaustive list. This review will explore their origins, their relative strengths and weaknesses and the contexts within which they have been used and are considered most suitable. The outcome of this section is to select the most appropriate evidence synthesis method, in terms of both robustness and feasibility, in the context of a literature review exploring structure, culture and management in primary care organisations, with a particular focus on the barriers and facilitators to the translation of guidance.

2.3 Methods

Meta–Ethnography

As previously mentioned some of the earliest work associated with evidence synthesis was by Noblit and Hare[59], whose seminal work in 1988 in the area of education proposed meta-ethnography and introduced the distinction between integrative and interpretative approaches[60]. In this work they cited Strike and Posner's definition of synthesis as an activity where separate parts (i.e. separate studies) are brought together as a whole[68]. They described it as an innovative process where the overall result should be being greater than the sum of its parts.

There are three reported stages to meta-ethnography: (1) Reciprocal translation analysis, where the key themes from each study are identified and these are translated into each other; (2) Refutational analysis, where the themes in each study are identified and any contradictions are characterised, these contradictions are then examined and efforts are made to explain them; and (3) Lines of argument synthesis, where a general interpretation is built, grounded in the findings of the separate studies. The overarching aim is to build up a picture of the whole study[60].

It is argued that meta-ethnography provides an alternative method to simply aggregating the data from separate studies and involves both induction and interpretation. Through the findings of separate studies being 'translated' into each, the researcher is encouraged to understand and transfer ideas and concepts across the studies[67]. Dixon-Woods et al. describe it as an approach which offers a "*systematic approach combined with the potential for preserving the interpretive properties of the primary data"* [50] and it is regarded as:

"*perhaps the most well developed method for synthesising qualitative data and one that clearly has origins in the interpretive paradigm from which most methods of primary qualitative research evolve"*[67].

Examples can now be found not only in the educational literature but also increasingly in a health services research context and it is especially

appropriate for questions relating to patients' experience of illness and care. It has been used to understand conditions such as diabetes[69], chronic fatigue syndrome[70], and medicine taking[71].

One example demonstrating the strengths of meta-ethnography within a health services setting is the 2010 study of Schumm and colleagues exploring the influences on patients' and their partners' treatment decision-making for prostate cancer[72]. The authors conducted a meta-ethnographic synthesis of published qualitative papers in the field, identifying that the 'couples' relationship dynamic' was significant in influencing their cancer journey. Through the synthesis of existing evidence, new insights and understandings of the experiences of prostate cancer patients and their partners were identified which in turn strengthened the existing evidence base. These findings provided a platform to develop support services designed to help and support couples as they deal with prostate cancer, ultimately, having a direct influence on practice and, in particular, the patient experience.

Another example of meta-ethnography explored teenage pregnancy and the experiences of teenage mothers in the UK[73]. The findings identified recurrent themes across the studies which included poverty, stigma, resilient mothering, kin relations and social support. Once identified these themes were integrated to form new interpretations and understandings which had implications for both policy and practice in the UK.

As evidenced by these examples, a strength of meta-ethnography is its potential to promote a greater understanding of a range of divergent study findings using an interpretive rather than aggregative approach. It uses a systematic approach which provides transparency to the process of identifying themes and relationships between studies. Although specifically designed for synthesising qualitative studies, meta-ethnography also has the ability to add to Health Technology Assessment (HTA) reviews. An example of this was the exploration of new insights and understandings of the barriers and facilitators to diabetes action plan use. These insights enabled a better understanding of the

trial interventions identified as effective in an earlier systematic review in relation to the promotion of action plan ownership and use[74].

A specific criticism of this approach, which is also applicable to many evidence synthesis methods, is that to synthesise studies that are carried out in very different contexts is challenging and that any attempt to do so may ignore the richness of the original research[67]. This argument is, however, refuted by those who believe that the full contribution of qualitative research will never be achieved if findings are merely accumulated and some kind of synthesis is not conducted[67]. Britten and colleagues' actually suggested that although it is crucial that the method of synthesis be appropriate to the research being synthesised, it may also be important to deliberately include studies conducted in disparate settings in order to ensure key themes, particularly at a higher level, are not missed as a result. It is clear from these examples that meta-ethnography is best suited to generating higher level theories of behaviours or experiences. It could also be argued that given the complexities and decision making processes, involved in the process it is an approach best suited to a study being undertaken by a team of researchers, potentially with multi-disciplinary experience[75]. As with other evidence synthesis approaches, there are challenges to address concerning quality appraisal and sampling.

Grounded Theory Synthesis/Formal Grounded Theory

Grounded theory is a primary qualitative research approach that has been hugely influential in the development of qualitative research methods in health services research[50]. It was originally developed by Glaser and Strauss and offers methods for sampling, data collection and analysis[76]. Like meta–ethnography, grounded theory is an interpretative approach with the overall aim being to generate theory.

Although generally used as a primary research method, grounded theory also has the potential to be used as an approach to evidence synthesis. This is through use of the constant comparative approach which involves identifying concepts and patterns in the data from primary studies and clustering these to identify relationships[77].

There are few examples of grounded theory being used as an evidence syntheses approach, however the most frequently cited examples are within the nursing literature, focussing on areas such as domestic violence[78] and aspects of caring[79,80]. One of the most robust examples is Kearney's grounded theory synthesis exploring women's responses to violent relationships. In this example 13 studies presented across 15 reports were examined and analysed with a view to synthesising a theory relating to how women respond to such relationships. The aim was to develop a formal theory that could link common themes across the primary studies, which varied in both focus and context. A model of 'enduring love' was identified to conceptualise women's experiences. This drew from a range of contexts and integrated psychological, socio-cultural and practical factors. These findings provided a unique insight into this area allowing healthcare professionals to develop appropriate strategies[78].

Eaves highlights one of the key criticisms of grounded theory as an approach, its lack of clarity. Many published studies do not explicitly describe their methods and hence there is a lack of availability for both scrutiny and adoption. Eaves also suggested that most researchers using grounded theory will tend to use his or her own variations of the technique which again can result in a lack of consistency[79].

As with meta-ethnography, a key strength of grounded theory is that it generates higher order categories and generates overarching theories and concepts. It also encourages reflexivity on the part of the reviewer whilst at the same time preserving the interpretative aspects of the primary data. Another strength is that it applies 'like methods to like materials'[78] i.e. the primary studies that are being synthesised would have been subjected to the same types of analysis and sampling techniques as is used in the larger synthesis process.

Realist Synthesis

At the time of writing, realist synthesis is a relatively new but emerging method which is particularly appropriate when reviewing evidence associated with complex social interventions. It is considered by academics and policy makers

as a 'policy friendly' approach[81] as it seeks to provide an explanation of how and why complex interventions work in specific contexts or settings[82-84]. Many believe that a realist synthesis approach can combine theoretical thinking and empirical evidence in a way that can be used to inform policy[83] and, as such, it tends to be associated with evidence based policy and practice.

As a synthesis method, it stems from realist review which was originally developed by Pawson in the context of complex social interventions, to explore systematically 'what works, how, for whom, in what circumstance and to what extent?'[82,85] Despite being relatively new, there are examples of realist syntheses covering a wide range of important policy issues such as prevention of childhood obesity[86], school feeding programmes[87], homelessness and mental health[88,89] and practice development[90,91].

One of these examples was undertaken by Greenhalgh and colleagues[87]. They carried out a realist synthesis to supplement the findings of a Cochrane review of school feeding programmes. The Cochrane review provided evidence about the feeding programmes that worked and had included trials using varying designs. Having been implemented in a wide range of social and educational contexts, however it did not explain how and why the feeding programmes had worked and in what contexts. The findings of this synthesis added to the Cochrane findings and provided evidence regarding situations in which the programmes were more likely to be effective.

Continuing on a policy theme, in 2012, Best and colleagues conducted a realist synthesis at the request of the Canadian Ministry of Health. The purpose was to guide four major policy development and strategy initiatives focused on patient and family centred care, primary healthcare renewal, quality improvement and surgery waiting lists, with a view to identifying examples of successful and less successful large system transformation initiatives[92]. Ultimately the Canadian government wanted to be clear about what their role should be in the process and outlined options for evaluation. The findings of the synthesis were able to identify five simple rules likely to enhance the success of the initiatives.

A recent example of realist synthesis is Rycroft-Malone's 2016 study exploring the role of Collaborations for Leadership in Applied Health Research and Care (CLAHRCs). CLARHCs were established in 2008 to encourage collaboration between healthcare services and higher education organisations. In excess of £200 million was provided to support this initiative, with a view to enabling the research and practice communities to work together and accelerate the implementation of research evidence[93]. Rycroft-Malone and colleagues set out to investigate this theory taking a realist synthesis approach based on 'what works, for whom, how, why and in what circumstances'. The findings proved that merely establishing a collaboration was not the 'quick fix' hoped for and that time is needed to build collaborative relationships and allow them to develop. Through their synthesis of the evidence they were able to develop action statements and a 're-useable conceptual platform' regarding the implementation within a collaborative organisational context to inform future initiatives.

As evidenced by these examples, the main strength of realist synthesis is that it is stakeholder driven and, as a result, can help to build common ground between social researchers and policy makers. It allows researchers to systematically explore why complex interventions do or do not work and in what contexts, and can provide policy makers with the potential to answer challenging questions in order to inform decision making and policy development[81]. Given the complexities of the modern health service, this is a compatible approach that is sympathetic to the use of mixed methods and multi-disciplinary evidence[83]. In addition, administrative, legislative and grey literature can all add to a realist synthesis, contributing to the richness of the contextual information being gathered[83].

A criticism of this approach, however, is that it is not standardisable or reproducible in the same way as conventional systematic reviews, and because it is an interpretative approach, it does not easily lend itself to any formal procedure or method[81]. The quality assurance within the review process is also very dependent upon the researcher[84]. Due to this lack of a 'map or guidebook', this approach tends not to be suited to an independent researcher[83]. At the time

of carrying out this study, there were still only a few published examples of realist synthesis and these tended not to include much detail of the methods, with authors focussing on the dissemination of the findings[94].

Meta–narrative Synthesis

Meta-narrative synthesis is an approach developed as an adaptation of realist synthesis. It was developed by Greenhalgh and colleagues in order to inform complex policy related questions, specifically where a topic has been researched in different ways by multiple and multi-disciplinary groups[81]. Where realist synthesis and meta-narrative synthesis differ in their approach is in their philosophical position. Meta-narrative synthesis takes a more constructivist position whereas realist synthesis is based on a realist philosophy of science which informs its methodology.

Meta-narrative was originally developed to try and explain the disparate data collected in a review of diffusion of innovations in healthcare study. The review was commissioned by the Department of Health and set out to answer the question – 'how can we spread and sustain innovations in health service delivery and organisation?' Greenhalgh describe the meta-narrative approach as the *'unfolding of a storyline of research in a particular scientific tradition'* by identifying key texts in a specific area and then analysing the concepts and theories that have been proposed by key experts in that given field[95]. From this body of work, the researchers identified that core concepts such as 'diffusion', 'innovation', 'adoption' and 'routinisation'' had been explored in different ways by a wide range of multidisciplinary researchers. Consequently, they developed meta-narrative synthesis in order to try to understand the different paradigmatic approaches.

A key strength of this approach is that it offers a strategy to assist policy makers understand and interpret conflicting bodies of research and hence it can also be used effectively to inform decision making[81]. However, similar to that of realist synthesis, many judgements are made by the researchers themselves, and hence even the developers themselves acknowledge that a different group of researchers setting out to answer the same research question may identify a

different set of primary sources and may make different judgments in relation to quality and relevance. They argue that any findings from this type of evidence synthesis should be considered as 'illuminating the problem', and highlight areas to consider rather than being considered as definitive answers[95].

Narrative Synthesis

Narrative synthesis is a term often interpreted differently. Some describe a conventional systematic review or a general descriptive discussion to be a narrative synthesis while others consider it to be a method of synthesising qualitative studies[96]. Due to this lack of consensus about exactly what a narrative synthesis is, a specific guidance document for conducting such a synthesis was produced by Popay and colleagues[56]. In this paper they describe narrative synthesis as a form of story-telling and refer to it as an approach to the systematic review and synthesis of findings from multiple studies that relies primarily on the use of words and text to summarise and explain the findings rather than statistics[56].

In 2009 Rodgers and colleagues undertook a study to test the use of this guidance framework for narrative synthesis[97]. They conducted a comparison of a guidance led narrative synthesis and a meta-analysis using the same study data. They found the conclusions of the two studies to be broadly similar but also identified some specific differences. They highlighted that the conclusions from the meta-analysis regarding the impact of moderators of effect was stronger than in the narrative synthesis; however, the implications for further research were more extensive from the findings using the narrative approach. Overall their findings highlighted that narrative syntheses can add to the findings of a meta-analysis, and that having a guidance framework to follow was a useful and transparent approach.

The use of a guidance framework undoubtedly adds a level of transparency and robustness to narrative synthesis as an approach, taking it a step beyond some methods, which are more influenced by researcher judgement. In addition, the process of unpacking the narrative synthesis into four elements as described in the guidance framework, allows the researcher the opportunity to move beyond

merely producing a simple summary of the data and encourages a more reflective and reflexive approach[97].

Critical Interpretative Synthesis (CIS)

Critical Interpretive Synthesis (CIS) is also a relatively new method. It is strongly influenced by grounded theory and meta-ethnography and also boasts the potential to generate new theories[96]. It was developed by Dixon-Woods and colleagues during their study of access to healthcare[61], the aim being to produce a theoretical explanation, grounded in the evidence, regarding access to healthcare by vulnerable groups. They specifically wanted to include minority groups such as those economically disadvantaged, people of minority ethnicity as well as younger, older and child groups. They also wanted to explore the impact of gender. The authors originally planned to conduct a meta-ethnography, however, they found that in doing so they had to adapt the process in order to incorporate quantitative data and to apply it to a substantial body of data, in this case 119 papers. They labelled this new methodology 'Critical Interpretative Synthesis'.

Dixon-Woods describes CIS as a process which applies to the whole literature review not just the synthesis element[60] and proposes it as a model *'sensitised to the kinds of processes involved in conventional systematic review while drawing on a distinctively qualitative traditional of enquiry'*[61]. Where it specifically digresses from meta-ethnography is in the synthesis output. The aim of a CIS review is firstly to produce a critical overview of a body of evidence in a particular area, and then secondly to develop a theory to help understand it in order to inform policy, practice and future research[98]. CIS involves an iterative approach to defining the research question and then searching the literature, using theoretical sampling. It also has a particular approach to appraising the quality of the primary studies, using relevance as the key determinant. This is a novel approach to appraising quality, where the contribution a study is likely to make to the overall theory generation is considered, rather than considering the quality of the methods.

CIS has a two stage process for developing its output. Firstly, the assembly of 'synthetic constructs' resulting from the transformation of the underlying evidence into a new conceptual form, and secondly the creation of a 'synthesising argument'. In their study on access to healthcare by vulnerable groups, Dixon-Woods and colleagues analysed and compared the data across studies to generate a new set of themes, which were linked and categorised. The findings identified a synthesising construct of 'candidacy' and suggested that entry to health services was dependent upon people recognising themselves as having some claim to medical support. The authors concluded the idea of candidacy helps to identify where and when people are vulnerable as well as to recognise the influence of wider contexts[61].

More recently Talseth and Gilje[99] have used CIS to gain a greater understanding of nurses' responses to suicide and suicidal patients. The researcher's rationale for undertaking a CIS was to increase clarity about what is known in order to enhance practice and guide future research. Their findings identified four key concepts from the literature: critical reflection, attitudes, complex knowledge/professional role responsibilities and the desire for support services and resources. They reported to have found CIS a helpful approach in terms of organising both the aims and findings of the studies included in the review and that the systematic processes allowed them to gain a historical insight when summarising the findings. They concluded that their synthesis had helped to develop a deeper understanding of nurses' responses to suicide and suicidal patients which had enhanced conceptual, contextual and methodological perspectives on the topic[99].

One of the most recent examples involves CIS being used to support a programme of research to develop a tool to support the appraisal of health systems guidance as well enhance the development and reporting of such guidance statements[100]. Here the authors used CIS to synthesise the literature in order to identify themes relevant to the development of health systems guidance, reporting and quality appraisal. The authors in this study summed up the key strength of CIS as being the fact that it supports a systematic approach allowing complex and diverse bodies of literature, including qualitative,

quantitative and theoretical papers to be included. Secondly, they claimed that CIS allows the development of new theories through an interpretive mode of inquiry, which is in contrast to that of systematic reviews, which aggregate data, pool and summarise common outcomes across studies. Finally, they reported that CIS allows a more flexible and iterative approach. For example, when conducting a CIS, it may not be possible or even desirable to specify in advance the exact review question or determine the categories under which the data could be summarised as it is best for these to emerge from the literature. Therefore, the review question may not be a specific hypothesis and is refined in response to the literature search[61].

In addition to these benefits, another strength of CIS is its proven application in challenging and complex contexts within healthcare, for example, access to health by vulnerable groups[61], nurses' responses to suicide[99] and the use of morphine to treat cancer pain[101].

However, as with other evidence synthesis methods it is confusing how best to approach quality appraisal and sampling. Data extraction is also challenging, with no standardised method for doing this being recognised. Methods for quality appraisal within a CIS have raised concerns as studies are not excluded on the grounds of quality. The rationale for this is that it is believed that they can still contribute to the theoretical development of the synthesis topic[61,101]. On the other hand, Talseth and colleagues, adopted a more controversial view in suggesting that since all of the studies in the sample were published in peer reviewed journals that in itself could be considered as a quality indicator[99].

Thematic Synthesis/ Combined Separate Synthesis

Thematic analysis was originally developed by researchers from the Evidence for Policy and Practice and Co-ordinating (EPPI) Centre at the Institute of Education in London, in order to address questions concerning what works in relation to health promotion interventions[102-104]. It involves starting with a very broad based research question and systematic search strategy, the findings of which then guide the development of a set of sub-questions. Identified studies are then grouped according to their type, either qualitative explorative studies or

quantitative intervention studies. These studies are then appraised for quality using tools appropriate to their study type. Data is extracted from both types of study and the evidence from both groups is brought together combining two separate reviews into one synthesis. A thematic approach is used to organise the evidence by identifying the main and recurrent themes across multiple studies and presenting them in the form of a summary. The key advantage of this method is that it allows a clear mechanism for the incorporation of both qualitative and quantitative evidence.

Thomas and colleagues used this approach to explore the barriers and facilitators to healthy eating among children aged 4-10 years[102]. The specific focus of the review was to examine fruit and vegetable intake. They searched for two types of study: controlled trials that examined interventions to promote healthy eating and studies that examined children's perspectives and understandings, generally using qualitative methods. Thirty-three trials and eight qualitative studies were identified and these were quality assessed using methods appropriate to the study type. They then conducted a meta-analysis with the data extracted from the trials and used qualitative methods to synthesise the data extracted from the qualitative studies. These findings were then integrated.

More recently Thomas and Harden have taken this approach a step further by applying it to the synthesis of multiple studies and labelling it 'thematic synthesis'. Thematic synthesis combines the principles of meta-ethnography (using reciprocal translation) and grounded theory (using the constant comparison technique), and was developed in order to answer questions relating to intervention need, appropriateness and acceptability, as well as effectiveness without compromising the principles developed in systematic reviews[60]. The process has three stages: the coding of text line by line, the development of descriptive themes and the generation of analytical themes[105]. At the time of development this process was novel as computer software could be used to code the results of included studies, and summary tables could be produced. It allows clear identification of key themes and provides an organised and structured way of dealing with the literature under these themes. Where it

differs from meta–ethnography and grounded theory synthesis is that although new constructs and explanations are generated, thematic synthesis tends to directly reflect the main ideas and conclusions across bodies of evidence, looking for prominent themes rather than developing 'higher order' theories[106].

Thematic Synthesis is a flexible approach which provides a clear framework to manage both qualitative and quantitative evidence. A key strength is the use of computer software to manage the data which goes some way to addressing the issue of transparency and leaves an audit trail which may facilitate reproducibility. Thomas and Harden attempted to address the issue of quality appraisal and argued that although their approach to the 'hierarchy of evidence' was somewhat different to what would be found in a traditional systematic review, they had conducted a sensitivity analysis and found that when they examined the relative contributions of all studies towards the themes generated, poorer quality studies tended to contribute very little to the synthesis.

Meta –study

Meta-study is a synthesis approach developed by Paterson and colleagues, which they describe as a multi-faceted approach[107]. They propose three key stages which should be undertaken prior to the actual synthesis: an analysis of the theory (meta-theory), an analysis of the methods (meta-method) and then an analysis of the findings (meta-data analysis). Collectively these stages are integrated and through a meta-synthesis process produce a meta-study. The idea is that once all three stages are complete, the meta-synthesis stage *'brings back together the ideas that have been taken apart'* and creates new interpretations[107].

One example of this approach is Edward and colleagues study which aimed to identify the external influences on information exchange and shared decision making in healthcare consultations and identify how this information could be used both during and out with consultations. The uniqueness of this approach is that researchers may adopt different approaches to the different stages of analysis within a meta-study. In this study the researcher chose to use meta-ethnography for the meta-data analysis stage, because it allows creativity and

flexibility whilst at the same time providing a structure, and took a thematic analysis approach for the meta-synthesis stage, which allowed them to identify common themes across studies and to re-examine relationships between emergent themes[108].

Another example of meta-study was conducted by Lloyd Jones. In this example the author used meta-study to determine the factors that facilitate or impede the role development and effective practice of clinical nurse specialists, nurse practitioners, advanced nurse practitioners and consultant nurses based on acute care. The author reported the process as incredibly demanding and time consuming and best suited to a research team rather than an individual reviewer[109].

Qualitative Cross-Case Analysis/Synthesis

Qualitative cross-case analysis was developed by Miles and Huberman[110] and involves the use of tables or matrices to summarise data from across both qualitative and quantitative studies[96]. Matrices are developed in order to categorise the data, using summary tables based on content analysis, using case-ordered displays. It is a highly systematic method, is transparent and can incorporate both qualitative and quantitative evidence. An example of this approach is McNaughton's study published in 2000. Here the author synthesised 14 studies on the home visit practices of public health nurses within the context of maternal-child health. The overall aim was to produce an organised and rich description of public health nursing practice based on the identification of common elements and differences between the included research findings, hence illuminating aspects of nursing practices that cannot be identified from individual reports alone[111].

This approach has received particular criticism from within the qualitative community, which argues that the process can stifle the interpretive process and encourage an emphasis on a priori themes rather than generating theory from the data[112]. It also offers no advice on sampling or appraisal of primary papers and to date there have been very few examples in health services research.

Framework Synthesis

Framework synthesis is derived from framework analysis which was outlined by Pope, Ziebland and Mays in their 2000 paper and draws from the original work of Brymen and Burgess, and Miles and Huberman[110,113,114]. Framework synthesis is a matrix based method, which involves the construction of thematic categories into which data can be coded and it offers a highly structured approach to organising and analysing data using indexing and charts[115]. It was originally designed to inform policy driven questions and one of its key features is the ability for the researcher to identify themes or categories in advance, allowing specific issues or questions as identified by key stakeholders, be it policy makers, practitioners or user groups, to be addressed. The advantages of this primary method make 'framework-based' synthesis an equally attractive option for synthesising evidence[116].

Examples of its use include Brunton and colleagues' review of children's, young peoples and parents' views of walking and cycling[117], where there was a need to synthesise existing studies in order to identify specific recommendations for the developing interventions for the key stakeholders. Through the adoption of a framework synthesis approach the authors were able to identify four recurrent themes, which resulted in the development of recommendations and areas for further research for policy makers.

In the case of Oliver et al, they used an adapted framework synthesis in their study and developed a framework for analysing public involvement in health services research[118]. They described their method as an iterative process which involves familiarisation with the literature, gradually developing a conceptual framework, based on the review question as well as the literature, and then applying this framework to the evidence extracted included studies. They used a charting system to identify the range and nature of public involvement and to identify relationships between themes.

As highlighted, an attractive element of framework synthesis is the fact that a pre-defined framework can be developed which can be informed by the background literature or through research team and stakeholder discussions.

Although this means it is a largely deductive approach, new findings can still be identified and incorporated into the framework as they emerge. This method also allows the creation of data displays, meaning that findings can be assessed by researchers other than the primary reviewer, and hence this facilitates team working and transparency[118].

'Best Fit' Framework Synthesis

'Best fit' framework synthesis is a relatively new approach and is an evolution of the original method of framework synthesis. The main difference is the use of a conceptual framework as an initial starting point for coding the data and adapting it as appropriate, hence the term 'best–fit'[8].

Following on from the work of Oliver et al, Carroll and colleagues[8] developed the 'best-fit' framework approach to synthesis in order to explore the views of adults taking chemo-preventative agents to prevent colorectal cancer. They used a conceptual model as an initial starting point for synthesising evidence from 20 studies but found they wanted to revise this model so that it provided a 'best fit' to the evidence being reported across the studies. Carroll and colleagues justified this approach given the tight time constraints within which they were working and promoted it as a pragmatic approach for answering time sensitive policy related questions.

Following this seminal paper in 2011, Carroll and colleagues have since provided another 'worked example' of 'best-fit' framework synthesis, providing a clear and transparent guide on the methodology process[119].

As mentioned this approach to evidence synthesis requires the identification of a conceptual model or framework from the outset of the review, by identifying the key themes which make up the model, thus a priori categories are identified. Studies for inclusion in the synthesis are identified and selected using conventional systematic review methods, and evidence from these studies is then coded against these a priori themes. New themes are identified from any evidence that is not captured in the original model and is based on the reviewer's interpretation of the evidence and through constant comparison.

Using secondary thematic analysis, relationships between themes are identified and evidence can be re-explored based on these findings in order to adapt the original model or framework.

The strength of this approach is that it is a relatively rapid, transparent and pragmatic process in comparison to some of the other interpretative approaches[116]. This is in part due to the existence of a conceptual framework from the onset. However, data that cannot be categorised within this existing framework does still require interpretation using both induction and thematic analysis techniques[119]. It, therefore, benefits from the use of both integrative and interpretive approaches. Carroll's most recent example, set within the context of a synthesis of employees' views of work place smoking cessation interventions, has found this approach to be both practical and fit for purpose[119].

Summary

This review critiques just some examples of more prominent methods of evidence synthesis which appear in the health services research literature and may have the potential for use in the context of a literature review exploring structure, culture and management in primary care organisations. Appendix 1 provides an overview of these methods.

2.4 Quality Appraisal

With such a variety of evidence synthesis methodologies, there are a huge range of methods utilised for quality assessment[60]. Barnett and Page argue that methods such as framework synthesis and thematic synthesis, which share a more 'critical realist' approach, have more robust approaches to quality assessment. It could also be argued that 'best-fit' framework synthesis, using an innovative combination of existing methods for quality assessment, lends itself to this grouping[119]. Other methods are less explicit regarding their quality assessment process, with some approaches judging quality on the extent to which it may inform the theory[60]. There is also a school of thought that raises concern about excluding poorly conducted studies on the grounds of quality given they may still provide important insights into the phenomenon being explored[61,67,75].

However, there is considerable debate in this area, particularly concerning the assessment of the quality of qualitative studies[120]. Some authors have produced sets of criteria and checklists to assist in the evaluation of qualitative studies and in 2009 the National Institute for Clinical Excellence (NICE) outlined 14 key questions to be considered when rating qualitative studies[121]. The use of these however, remains controversial[69]. There is indeed those who take the view that the use of quality checklists in qualitative research is over prescriptive and runs the risk of suggesting that 'one size fits all'[112]. Barbour cautions that in the use of quality checklists there may be a real danger of the tail (the checklist) wagging the dog (the research)[112].

There are currently some 100 plus quality appraisal tools available[63]. Consequently, this makes it challenging for reviewers to know where to start, and indeed what constitutes quality in qualitative research is a much contested and subjective area with different disciplines often placing varying values on different aspects of the study design.

2.5 Sampling

Like quality appraisal, sampling is another area of debate when exploring evidence synthesis methods. There are contrasting views on whether all relevant studies should be located and included in a synthesis or whether, when there are a large number of relevant papers, a purposeful sample could be derived[58]. Systematic reviews of trials attempt to locate every possible study on a given topic or intervention, and some authors advocate a similar approach to evidence syntheses. However, in keeping with the traditional methods of primary qualitative research, there may be an argument in favour of the use of sampling until data saturation is reached. Malpasss and colleagues used the concept of key papers to refer to those which were conceptually rich and contributed most to their synthesis. They found that removing papers not rated as key papers had no obvious impact on the synthesis[122]. Therefore, it may be appropriate where there are a large numbers of papers available for synthesis, to base the sample on a purposeful sample of key papers. However, there must be sufficient studies to answer the question and allow comparisons among selected dimensions and constructs[123].

There are, nonetheless, difficulties with this approach in terms of how to establish the population of studies from which to sample without having first identified all relevant studies. It is also unclear how data saturation is determined in a synthesis, where access to the original data is limited, and limited guidance on this is available.

The issue of sampling was addressed in an HTA Report in 2011[96]. There it was claimed that in quantitative research, the purpose is usually to be comprehensive and to identify all the published and grey literature on a particular research question in order to reach unbiased conclusions. In qualitative synthesis, the aims may be different and, therefore, a purposeful sampling approach may be more appropriate[53]. The report went on to suggest that if the aim is not to produce an aggregative synthesis, then the omission of some papers may not have a dramatic effect on the results. Dixon-Woods who has been prominent in such debates in the literature, stresses that this is where the distinction between interpretative and integrative approaches is crucial[61] as is considering what the overarching aim of the review is and indeed its intended audience.

2.6 Discussion

This review has focussed on some of the more prominent methods for the synthesis of both qualitative and quantitative research evidence in health services research. It has highlighted the healthcare contexts within which these have been used and the difference between interpretative and integrative approaches, and the relative challenges associated with these. Whilst there is acceptance that data from different types of studies should be included in reviews it is clear that there is a ‘daunting array of theoretical and practical problems’[52].

Some of the methods described can be considered as more established whereas others may be considered ‘new’ techniques that have been specifically designed and developed for synthesising evidence. Some are even adaptations of methods originally designed for other research purposes[98]. Thus, there appears to be no one ‘best’ approach to use when synthesising a range of

evidence. Common challenges exist across all methodologies, including how best to select and appraise studies as well as how best to extract data in a robust and transparent manner. Searching for, identifying and appraising qualitative research may be considered to be both frustrating and difficult. This is partly because there is no equivalent of the Cochrane controlled trials register or other register for qualitative research. Qualitative research is not well indexed and, as a result, a combination of search methods is usually required[124].

The range of terms used to address and describe evidence synthesis approaches should also be noted. Many terms, such as 'meta-study', 'meta-synthesis', 'meta-narrative' to name but a few, appear very similar but have very different intended meanings. Some terms relate to the synthesis of the data while others refer to the whole synthesis process, which includes identification of studies, inclusion and exclusion criterion, and quality assessment[96]. Furthermore, not all authors are clear when defining their method, and consequently, there is a real potential for confusion.

No one single robust method stands out as a clear 'favourite', and the current stance suggests that the method should depend on the intended outcome of the research. For example, a researcher wishing to inductively understand a social phenomenon and generate theory may adopt a different approach to a researcher wishing to gain a better understanding of an empirically tested clinical intervention and apply the results to answering a specific clinical question or to inform policy[96].

2.7 Summary, Implications and Reflections

The purpose of this review was to inform the best approach to undertaking a literature review, exploring structure, culture and management within primary care organisations. The intention was not to generate new theories or higher order constructs but to explore the literature to identify the organisational level barriers and facilitators that exist in these organisations in relation to the translation of guidance. With this in mind, a method suited to an independent reviewer, with clear and transparent methods, incorporating both qualitative and

quantitative evidence from varying healthcare contexts to answer an already defined and specific question, was required.

Based on this exploration of evidence synthesis methods a ‘best fit’ framework synthesis will be undertaken. As explained, this approach is rapid, transparent and pragmatic and hence suited to the objectives of the thesis review. It also allows the use of an existing conceptual framework from the outset. Using this more deductive approach to evidence synthesis is heavily reliant upon the coding framework which in this case is beneficial as it provides a robust method for managing the large volume of data being synthesised.

This study is underpinned by the ‘Receptive Healthcare Contexts for Change’ model, which therefore lends itself to this method, allowing this to be used as the initial coding framework. ‘Best- fit’ framework synthesis also benefits from the use of both integrative and interpretive approaches allowing the use of pre-defined categories as well as having the potential to incorporate emerging themes. This approach also benefits from the existence of clearly described published examples which will provide the researcher with clarity regarding inclusion and quality appraisal.

This review and the process of undertaking a ‘best-fit’ framework synthesis is described in detail in Chapter 3.

CHAPTER 3: A LITERATURE REVIEW EXPLORING STRUCTURE, CULTURE AND MANAGEMENT IN PRIMARY CARE ORGANISATIONS IN RELATION TO THE TRANSLATION OF GUIDANCE

3.1 Introduction

The purpose of this literature review was to explore the structure, culture and management of primary care organisations in relation to the translation of guidance. This was undertaken through the identification of the organisational barriers and facilitators that exist in primary care organisations in relation to the translation of guidance, as well as notions of organisational culture that exist in primary care. This chapter details the aims of the review, the methods used and presents a 'best fit' synthesis of the key themes to emerge from the literature.

3.2 The Receptive Healthcare Contexts for Change Model

This work was underpinned by the RHCC model. This was derived from Pettigrew, Ferlie and McKee's study of strategic service change[7]. Their study investigated whether there was evidence of variability between health authorities, using case study methodology across eight district health authorities. Sixteen case studies were undertaken in total (two in each health board). Variation was identified and in order to make sense of this, the terms 'receptive' and 'non-receptive' contexts to change were introduced. The term 'receptive' is used to describe a set of features which are considered to be 'favourably associated' with change of facilitators, whereas the term 'non receptive' is used to describe factors which may be considered as barriers and are associated with 'blocking' change[125]. Pettigrew and colleagues inductively derived eight factors from the case study data considered to '*represent a pattern of association rather than a simple line of causation*'[7]. As suggested by Iles and Sutherland[126] these eight factors can be used as a checklist to assess how likely a specific context or organisation is to be receptive to an intervention.

Figure 2 below illustrates the model, showing the eight factors, how they represent a 'pattern of association' and the relationships that exist between them. Table 1 presents the eight factors and a brief definition of each.

This is an exploratory model rather than a predictive one but can be used as a systematic method of unravelling the specific features of any proposed behavioural or cultural change. Based on these eight factors the RHCC model emerged. The model explores the notion of 'receptivity' to change and highlights the interplay of the content, context and process of change.

Figure 2: The Receptive Healthcare Contexts for Change Model

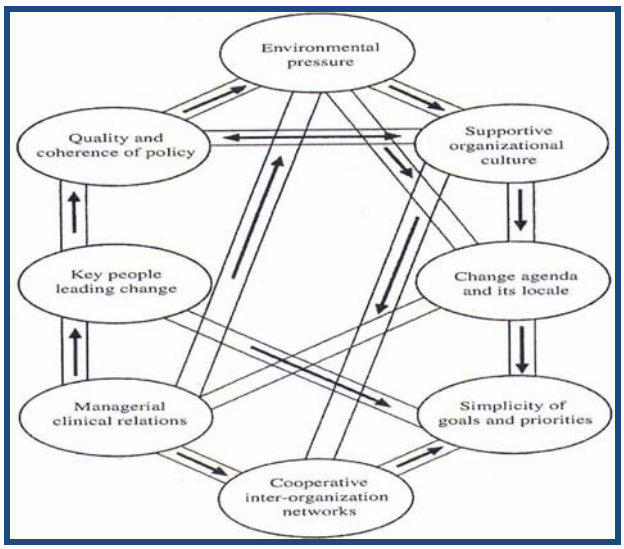


Table 1: Factors Associated with 'Receptivity to Change' and their Definitions

FACTOR	DEFINITION
(1) Quality & coherence of policy	The extent to which goals & methods of implementation are linked
(2) Key people leading the change	Having continuity of leadership skills
(3) Long-term environmental pressure	Awareness of external factors in triggering change
(4) Supportive organisational culture	Having values & behaviours which contribute to the achievement of change goals
(5) Effective managerial clinician relations	Managers understanding what clinicians value & clinicians thinking managerially
(6) Co-operative inter-organisational networks	Productive relations with related organisations e.g. social services & voluntary organisations
(7) Simplicity of goals and priorities	Establishing the key priorities for the change agenda and maintaining them
(8) Fit between the change agenda & the locale	Awareness that particular features of the locality may inhibit or accelerate change

3.3 Aims and Objectives

The aim of the literature review was to explore structure, culture and management in primary care organisations, focussing on knowledge translation. The research questions being addressed are:

(1) What organisational barriers and facilitators exists in primary care organisations in relation to the translation of guidance?

(2) What notions of organisational culture exist in primary care?

3.4 Methods

This was a comprehensive and methodical review. The search strategy and databases used are described in full, as are the inclusion and exclusion criteria. Key papers identified through the researcher's wider reading and through expert advice were also included.

As discussed in the previous section, 'best fit' framework synthesis methodology was selected. The key features of this method that make it an appropriate choice are its pragmatic, transparent and highly structured approach to organising and analysing the data. In addition, this method lends itself to the use of both integrative and interpretive approaches, utilising an existing model, the RHCC model. The RHCC model and the eight factors associated with 'receptivity for change' were used as an initial coding framework with the intention of incorporating additional emergent themes as they arose.

Apart from Carroll and colleagues' 2011 and 2013 studies, only a few examples, all published by members of the development team at the Institute of Education, University of London, of 'best fit synthesis', exist[118]. It has been used to explore public involvement in health services research, to synthesise views on walking and cycling in London[117] and to consider consumer involvement in the development of healthcare policy, clinical guidelines and patient information[8]. It has, however, never been used to explore organisational change in relation to the translation of guidance, and to the researcher's

knowledge it has never been used in the context of small primary care organisations. This, therefore, presented an opportunity to use this emerging methodology to further the evidence base around evidence synthesis methods, whilst at the same time offering a robust approach to organising and synthesising the literature. This approach is reinforced by recommendations made by the Cochrane Collaboration Qualitative Methods Group that where a well-defined model is available, it may not be necessary to develop a new one through the synthesis, and that an aggregated approach to data synthesis may be appropriate[127].

3.5 Search Strategy

The search strategy used to identify relevant literature included MeSH and subject headings as well as text words. Combinations of the following terms were used: evidence based practice/organisation and administration, practice guidelines, guideline adherence, general practice dental, general practice, primary health care, information dissemination, communication, practice management, organizational innovation, organizational culture, leadership, attitude of health personnel, organizational models, organizational change. The full search strategy is provided in Appendix 2.

3.6 Data Sources

The electronic databases searched were Medline (Medical Literature Analysis and Retrieval System Online) and Cinahl (Cumulative Index to Nursing and Allied Health Literature). These searches took place in January 2012 and each database was searched for literature published from January 2012 or earlier. In addition, relevant publications were identified from reference lists, the researcher's wider reading and from an expert group who were consulted to identify key papers within the field.

Both searches were updated in March 2016 and re-run for the period January 2012 to March 2016, when the researcher was finalising her thesis. These searches identified two additional papers (Hoff, 2013[128] and Zwart and De Bont, 2013[129]). One did not meet the inclusion criteria as it did not explore

organisational change in relation to knowledge translation. The other (Hoff, 2013) did meet the criteria, however, when compared with the data extraction matrix and synthesis findings, it did not yield any new themes in relation to the barriers and facilitators to the translation of guidance. Information about this study is included at the end of the Results Section.

3.7 Study Selection

To be included in the synthesis, papers had to explore structure, culture or management in relation to knowledge translation, in particular the translation of guidance in primary care organisations. The full inclusion criteria can be found in Appendix 3. For the purpose of this review the terms 'knowledge translation' and 'primary care organisation' were defined as outlined below.

3.8 Knowledge Translation

Knowledge Translation is merely one term used to describe the process of putting research findings into practice. However, terms such as knowledge utilisation, knowledge transfer, implementation and innovation diffusion are also used, often interchangeably. In fact, in 2005 Graham and colleagues identified 29 terms used to refer to some aspect of the concept of knowledge into action, highlighting the importance of defining what is meant by the term 'knowledge translation'[130]. Grimshaw and colleagues' 2012 paper claims that there are two main types of knowledge translation research. While T1 research is the translation of biomedical research into clinical science and knowledge, T2 research refers to the type of knowledge translation that will be focussed upon in this review. They define T2 knowledge translation as *'ensuring that stakeholders are aware of and use research evidence to inform their health and healthcare decision making.'*[131] This definition reflects the importance of a wide range of stakeholders in the knowledge translation process, and hence, this makes it an appropriate definition to use for the purpose of this review, which includes not only health care professionals but also patients, policy makers, and researchers, as well as the impact of environmental factors, such as the health care and political context they are operating within, and financial constraints that exist.

For the purpose of this review only papers exploring the translation of guidance or recommendations were included and not those exploring large scale quality improvement initiatives.

3.9 Primary Care Organisation

Primary care is defined as health services provided by those who act as a principal point of consultation for patients within a healthcare system[132]. A primary health care system is composed of a:

'core set of structural and functional elements that guarantee universal coverage and access to services that are acceptable to the population and that are equity-enhancing. It provides comprehensive, integrated and appropriate care over time, emphasizes prevention, promotion, and first contact primary care as well as intersectoral actions to address other determinants of health and Equity'[132]

Primary care organisations include general medical practices, dental practices, community pharmacies and optometrists. The rationale for restricting the inclusion criteria to primary care organisations is that one of the objectives of this PhD is to develop an instrument to explore structure, culture and management in general dental practice. Therefore, studies exploring the translation of guidance in primary care organisations, loosely generalisable to general dental practice were included. In addition, approximately 90% of people's contact with the NHS is at a primary care level[133].

3.10 Data Extraction

The details of all papers identified through the searches were downloaded into an Endnote database. Duplicate references were removed and the titles of all remaining publications were screened in relation to the review inclusion criteria. In the first instance, titles of papers that did not meet the inclusion criteria were excluded; following this, abstracts of all remaining papers were mapped against the inclusion criteria, and those not meeting the criteria were also excluded. The full text of all remaining publications were then obtained and reviewed in detail.

In order to ensure this procedure was robust, double screening was undertaken by two of the researcher's supervisors. Each supervisor took a sample of 50 titles and abstracts and screened the list for inclusion in the review. On comparison, 80% (40/50) agreement was reached with Supervisor 1 and 78% (39/50) agreement was reached with Supervisor 2. Where there was disagreement or uncertainty over a paper's inclusion, this was resolved by discussion or by retrieval of the full paper to make a definitive judgement.

The full texts of all potentially relevant citations were then screened using the same process. Data from relevant papers were extracted using a data extraction matrix developed to gather information such as author, title, citation, study design, aim, setting, participants, guidance area, a brief study description and the key barriers and facilitators identified to knowledge translation for each paper. This matrix was developed by the researcher and piloted using relevant papers as well as through discussions with the supervisory team. An example of the data extraction matrix can be found in Appendix 4.

3.11 Analysis

Data were extracted from all included papers and entered into the data extraction matrix. The key barriers and facilitators to implementing guidance in practice were identified, and where appropriate, aggregated based on similarity of themes. For example, where different terminology was being used to describe the same phenomenon, or where the researcher considered elements to be so closely related that they should be considered as one. This initial process assisted in reducing the data to a manageable level.

The RHCC model was used as the initial coding framework, and this provided eight initial themes or categories within which to code the extracted data. Barriers and facilitators identified from the data were mapped to the framework, ensuring that it was used only as a guide to support the data and that concepts were not 'shoe-horned' under the eight factors. Any emergent themes, which did not clearly fit within one of the eight themes, were identified and categorised as 'other' at this stage. Relationships within and across categories were

examined and revisions were made to the category 'headings' so that they accurately reflected the data. The result of this process was an adaptation of the original model the development of which is described in the Results Section.

3.12 Quality Appraisal

Following the approach used by Carroll et al, in their 2013 'worked example' of 'best-fit' framework synthesis[119], a 'Simple Reporting Assessment Checklist' was used in order to quality appraise included studies. This approach was developed by the same authors in a 2012 study, and is based on four questions relating to key procedural elements of the study. The four questions are taken from the Critical Appraisal Skills Programme (CASP) tool and are presented in Table 2 below.

Table 2: Reporting Assessment Checklist
(Taken from Carroll et al, 2012)

CRITERIA	CATEGORISATION	DEFINITION
The question and study design	Yes	If choice of study design was given and explained
	No	If article does not specify question and study design
The selection of participants	Yes	If participant selection is described explicitly (e.g. purposive, convenience, theoretical etc.)
	No	If only details of participants are given
Methods of data collection	Yes	If details of data collection methods are given (piloting, topic guides, number of items in a survey, validation etc.)
	No	If it just states, focus groups, interviews or questionnaire
Methods of analysis	Yes	If details of analysis method are given (e.g. transcription and form of analysis, validation tests etc.)
	No	If only states content analysis or that data were analysed.

3.13 Results

Included Studies

The total number of papers identified and exclusions made at each stage of the review is represented in Figure 3. *This, does not include the additional paper identified when the review was updated in March 2016. In total 89 papers were retrieved in full. Eleven, from the Cinahl search, 58 from the Medline search and an additional 20 identified through the researcher's wider reading, through examining reference lists and through expert advice. These papers were examined in full and of these 33 were excluded for not meeting the review

criteria. The remaining 56 papers, which fulfilled the review criteria, were included. All included studies are summarised in Appendix 5.

Study settings ranged across primary care, with the vast majority of studies being set within general medical practice. Other settings included general dental practice, community health centres and pharmacy. Study participants also varied across healthcare professions. The majority of participants were General Practitioners (GPs) but also included nurses, dentists, pharmacists, managers, administrators, decision-makers and academics. The breakdown of settings and participants can be seen in Appendix 5. The areas of guidance and recommendations under investigation covered a wide range of healthcare related topics. This range is illustrated in Figure 4.

From examination of all 56 papers, the main barriers and facilitators identified to the translation of guidance into practice were extracted. An initial list of 46 barriers and 50 facilitators were identified during this process. Using the 'best-fit' synthesis approach these barriers and facilitators were categorised under one, or more of the eight factor headings in the RHCC model. Where a barrier or facilitator appeared relevant under more than one heading, it was included under all that appeared appropriate. During this process it became clear that the original RHCC heading 'names' were not always worded in the most appropriate way to convey the meaning of the barriers and facilitators being extracted from this particular data, therefore the original RHCC model was adapted for the review, and this adaptation of the model formed part of the synthesis process.

Emergence of the Knowledge Translation in Primary Care Model:

This review is concerned with change in small primary care organisations; however, given that the RHCC model was developed from case studies conducted in large scale organisations, namely eight District Health Authorities, it is not surprising that the original eight factors identified were not all relevant and some headings required re-wording to accurately reflect the data. The main change was a reduction to seven themes rather than eight. The original factors

‘clinician-managerial relations’ and ‘co-operative inter-organisational networks’ were merged to establish a new theme labelled ‘relationships’, while ‘key people leading the change’ was renamed ‘leadership’; ‘environmental pressure’ was extended to include ‘external influences’; ‘supportive organisational culture’ became ‘organisational culture’ and ‘change agenda and its locale’ was re-named ‘change context’. The associations reflect overlap between the themes as identified in Figure 6. The process and rationale behind these changes is discussed in detail as part of the narrative describing the barriers and facilitators and is further reflected upon within the discussion section.

This emergent model was named the ‘Knowledge Translation in Primary Care’ model. A diagram can be seen in Figure 5 below and definitions of the revised themes are provided in Table 3, which follows.

Figure 3: Literature Review Search Process

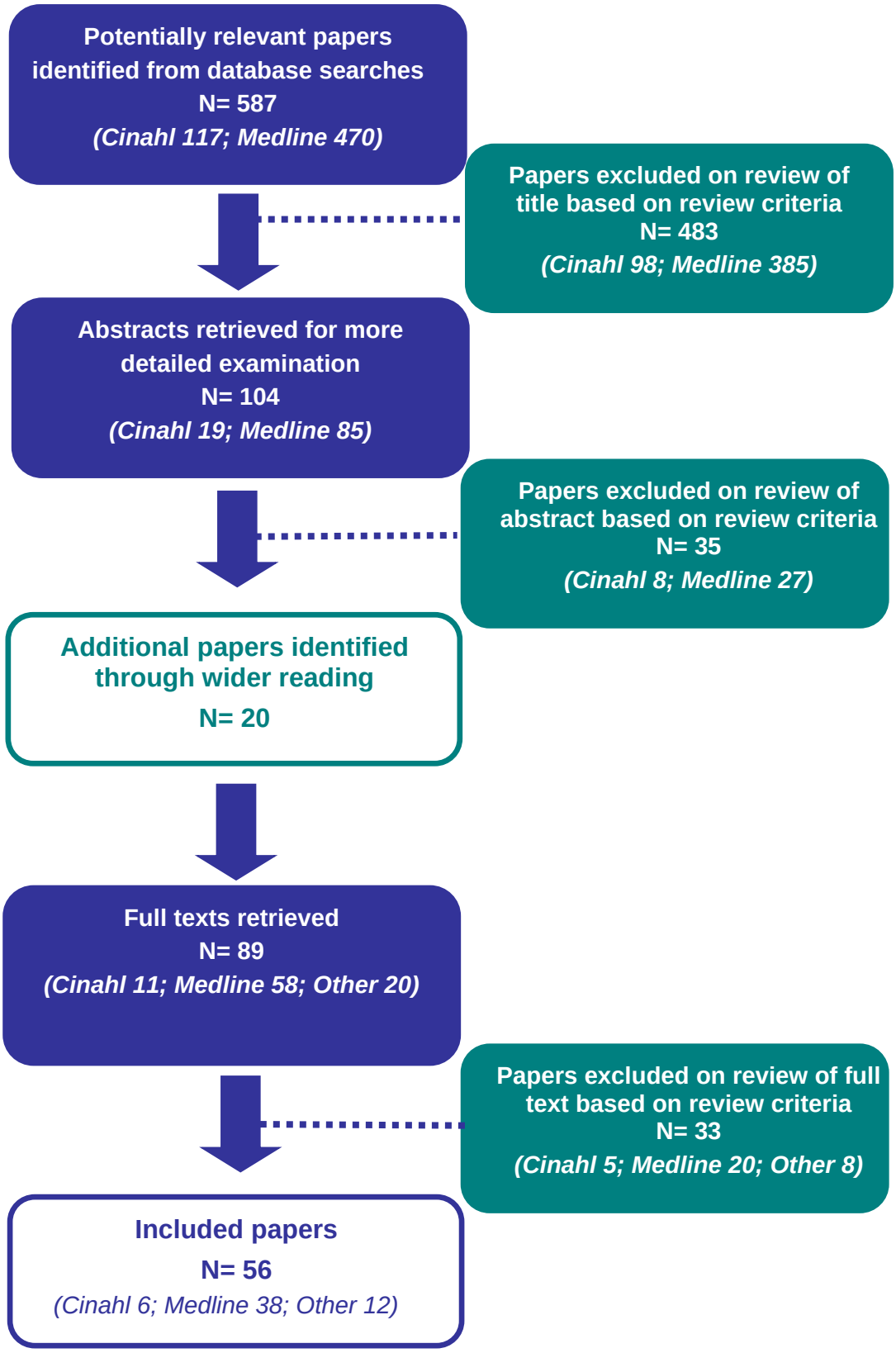


Figure 4: Guidance Topics Covered in the Literature Review

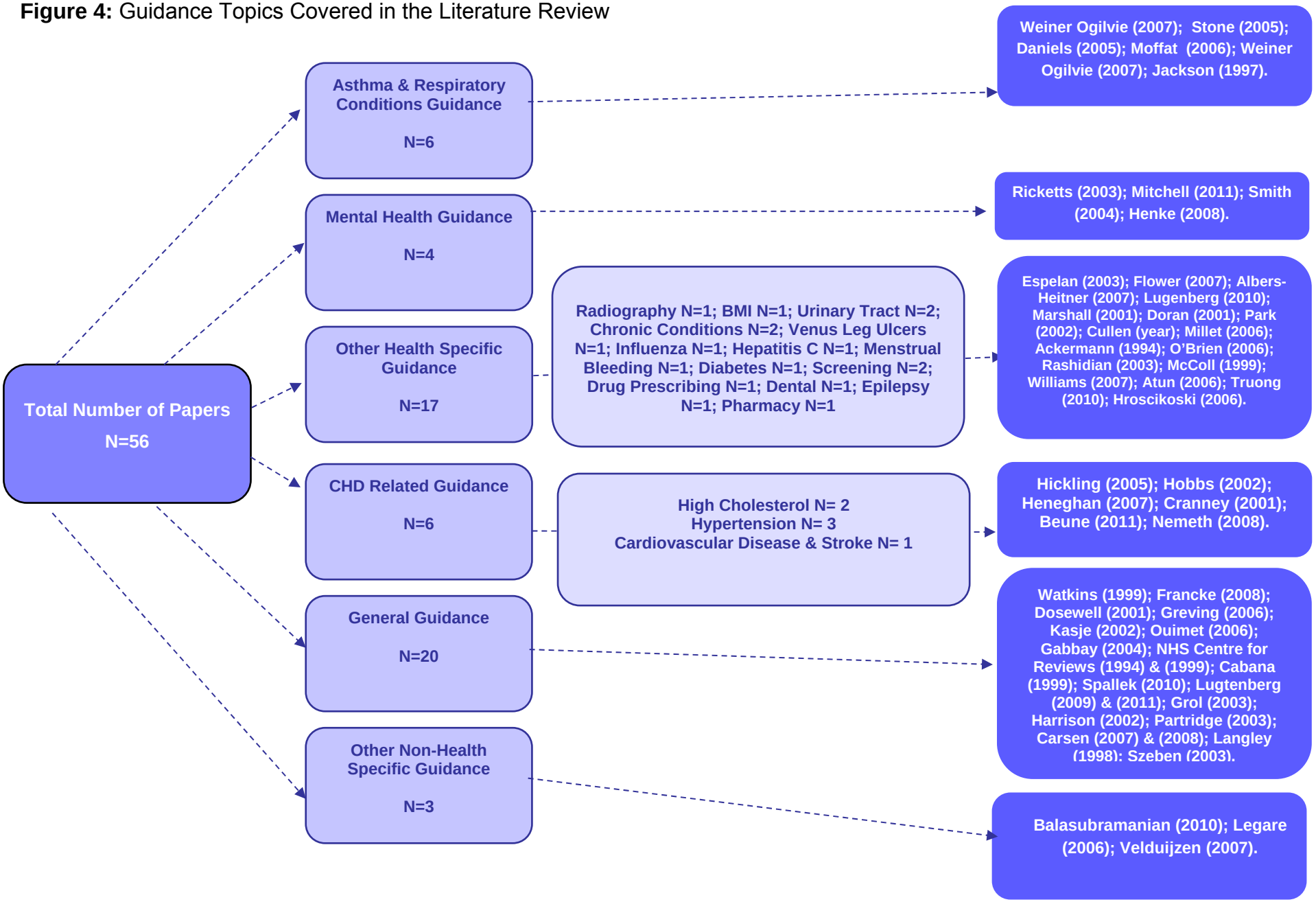
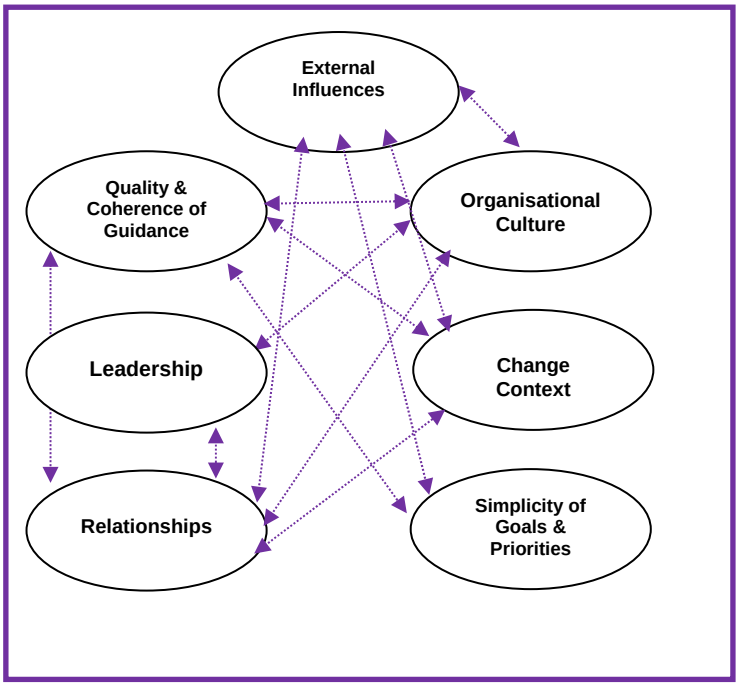


Figure 5: The Knowledge Translation in Primary Care Model



* Arrows illustrate associations identified across themes.

Table 3: Knowledge Translation in Primary Care Model: Themes and Definitions

THEME	DEFINITION
(1) Quality & coherence of guidance	The impact of the quality and clarity of guidance documents on healthcare professional's decision making process and ability to implement it.
(2) Leadership	The impact that positive leadership can have on the processes that exist within a primary care organisation and how that influences knowledge translation.
(3) External influences	An awareness of the external factors that can act as both barriers and facilitators to knowledge translation.
(4) Organisational culture	The impact of the practice environment, systems, processes and team members' attitudes on the translation of guidance.
(5) Relationships	The impact that relationships within and out-with a primary care organisation can have on the translation of guidance.
(6) Simplicity of goals and priorities	The ability of end users to narrow down the recommended changes into a set of key priorities that are easily transferrable into practice.
(7) Change context	The influence that the primary care context and the context of the guidance can have on the translation of guidance

Barriers and Facilitators:

Forty-six barriers and 50 facilitators were initially identified from the literature. These barriers and facilitators were synthesised to identify any overlap and were mapped to categories of barriers and facilitators. In total 23 barrier categories and 21 facilitator categories were identified; however, there was some cross-over with some categories appearing under more than one theme. A visual representation of this categorisation is illustrated in Figure 6.

During the synthesis process it became clear that some of the barrier and facilitator categories could be construed as individual rather than organisational. An example of this is the theme that a leader's characteristics can act as a potential barrier to knowledge translation. The literature suggests that factors such as a leader's age, gender, country of origin, country of training and level of IT literacy may impact upon knowledge translation. An example of this is Watkins and colleagues' study, where they found a more positive association regarding the use of guidelines among younger rather than older GPs[134]. However, these findings may be due to younger GPs having received more recent training, based on more up-to-date recommendations or a number of other organisational level factors. With this in mind however, if a leader's characteristics impact upon their decision making and they are championing this course of action within their team or organisation, this will undoubtedly have an effect on knowledge translation at an organisational level and, therefore, in such instances, these themes were included in the overall synthesis.

(1) External Influences

The first theme to emerge from the literature was the concept of external influences, which act as either barriers or facilitators to the implementation of guidance. This theme originated from the 'environmental pressure' category within the RHCC model. Environmental pressure was a factor that was highlighted in the literature as a barrier to implementation; however, other 'external' factors also emerged from the data, some of which may be considered to have a positive, more enabling influence rather than purely a barrier to change. When mapping the data to the original RHCC headings, it

was clear that ‘environmental factors’ would be a sub-category within a more overarching theme of ‘External Influences’.

Barriers

‘Environmental factors’ include the healthcare professional feeling coerced, either through political or legal means or through advertising[135-147], which in turn may increase the pressure that patients place on them. The literature suggests that healthcare professionals also face pressure from their peers to do things a certain way[147], although this may also act as a facilitator. This can include colleagues they work with on a daily basis or colleagues with whom they undertake training. For example, in general dental practice, associate dentists may face pressure from the principal dentist to follow certain procedures or use certain materials in order to be cost effective. ‘Environmental factors’ may also be experienced if there is no prioritisation of recommendations or a lack of any incentive to follow them[148]. If there is no sense of urgency or priority placed on the recommendations contained in a guidance document, it is unlikely to be at the forefront of healthcare professionals’ thinking and they are less likely to implement it.

Figure 6: Literature Review Categorisation of Barriers and Facilitators

Another barrier within 'External Influences' relates to the pressure faced by (a lack of) 'resources'. The term 'resources' captures a number of elements: time, as well as time to follow recommendations, time to undertake relevant training, time to appraise guidance and recommendations or time to spend discussing and explaining aspects of care with patients[135-139,141,143-145,147-177]. 'Resources' also include: the ability to purchase relevant equipment, having appropriate clinical facilities to carry out recommended treatment or being able to allow for longer appointments, and finance[135,136,138-140,144-148,150-152,154-158,161,162,165,166,168,170-173,175-184]. In addition, 'resources' may include the ability to sustain appropriate staffing levels to allow recommendations to be followed[135,137,138,149,150,152,155]. Resources of this kind are the most common barriers to emerge from the literature, with few studies not mentioning at least one of these elements. Indeed, resource implications are evident within most small primary care organisations, which are often operated as small profit making businesses. As mentioned, in dental practices NHS treatment is paid for on a fee for service basis as determined by the SDR. Private patients are charged the full cost of treatment, either on a fee for service basis or through private insurance schemes. These different payment structures may impact upon what the types of treatment provided and the decision making processes undertaken by healthcare professionals.

An example of this occurred in a study exploring general dental practitioner's (GDPs) views about what influences their behaviour in their practice of endodontics. One of the six key themes to emerge concerned resource implications and, in particular, ways of managing time and cost pressures within the existing payment structures in the NHS[146,157,158,162,180]. Both high and low compliance practices taking part in this interview study agreed that the NHS remuneration scales for endodontic treatment, especially for molars, did not reflect the time it took to carry out the work satisfactorily. It was also acknowledged that this pressure was greater for principal dentists than associates or other members of the dental team because, *"as an associate, you do not have the same sort of overheads as the principal".* GDPs reported that in order to deal with the tension between costs and time, they would either employ

some means of avoidance strategy, such as extracting the tooth rather than carrying out endodontic procedures or they would compromise standards of care by using sub-optimal but time-savings techniques. One GDP reported, *"In honesty I know there are a lot of benefits to be derived from the use of rubber dam, but I haven't used it routinely because of the time factor"*[157].

Another external influence is that of 'patient expectations'[138,141,144,145,160-163,167,169,175-177,182]. This includes patients' attitudes towards recommendations[138,161,162,169,176], the impact that their culture has on their expectations[138,162,163,169,176], and their compliance and knowledge or ability to understand the suggested course of treatment[141,144,145,160,162,167,169,175-177,182]. The impact of patients' expectations and how this can influence healthcare professionals' ability to follow guidance recommendations is a common concept across themes and, in particular, holds relevance in terms of healthcare professionals' relationships with patients as well as the context within which the recommendations are being implemented.

Patients' expectations were highlighted as significant in a study exploring factors that affect Norwegian GPs' decision making in connection with ordering plain radiography for back pain[141]. GPs taking part in a focus group reported that often patients would come to them seeking an x-ray due to advice given to them by other healthcare professionals such as physiotherapists or from family members. They reported that in some cases patients who have experienced long term symptoms may fear that they have a serious disease and may seek an x-ray to provide reassurance, to legitimise what is wrong with them or to support a sickness benefit claim. In cases where patients present with a strong sense of how they want to be or should be treated, this adds an additional consideration for healthcare professionals when deciding on their course of treatment, particularly if following recommendations that are not in line with the patient's wishes. It could, however, be argued that this may also act as a facilitator, encouraging healthcare professionals to comply with recommendations when this conforms with patients' expectations of what course their treatment should follow.

Other barriers to emerge as external influences are the notions of 'personal expectations'[141,146,150,169,176] and 'reduced autonomy'[147,148,167,169,173,182,185,186]. 'Personal expectations' describe factors such as high stress levels impacting on the ability to make changes and finding it emotionally difficult to follow new recommendations[141,169,176], and a sense of being overwhelmed by the enormity of the change required[146,150]. Related to this, and perhaps even playing a part in this sense of pressure, is the idea of 'reduced autonomy'[140,147,148,167,169,185,186]. In their study to explore organisational factors and how these relate to guideline uptake by GPs, Dowswell and colleagues found that almost half of their participants felt that using guidelines would reduce the doctors' autonomy[186]. In contrast with this however, Harrison and colleagues found that although a third of the practice nurses they interviewed agreed that using guidelines would reduce the autonomy of doctors, they did not necessarily see this as a negative[185]. This study found that nurses saw the guidance as a means to challenge GPs clinical decision-making if they were not in agreement. Nurses reported that guidance enhanced their own autonomy and provided foundations on which to develop their own expertise. One participant from this study reported:

"It makes my job a lot easier if I can wag my finger at the doctor and say 'It's alright you saying that but you know you can look at the BTS guidelines for asthma, it does say 'add in seravent blah de blah" you see what I mean?"[185]

Facilitators

A number of facilitators emerging from the literature were also categorised as 'External Influences'. Unsurprisingly many factors considered to facilitate the implementation of guidance are the counterpart to the barriers, so where a lack of resources is considered a barrier, increased 'resources' is considered a facilitator[138-140,144,147,148,155,157,165,170,171,177,179,181,182]. This may be in terms of increased finance or resource re-allocation[138,144,155] but can also be in the form of access to appropriate facilities[136,155,165,170,177,182].

An example of how a re-allocation of resources may facilitate the implementation of guidance was highlighted by Doran and McCann[155] in their

study assessing the attitudes of general practice staff to the annual flu immunisation procedure. They found that some practices faced pressures due to the expense of the annual immunisation programme more than others. This was due to a delay between payment of the pharmaceutical companies and remuneration by the Health Authorities. Practices with better organisational systems in place were better able to manage this payment process, and hence it had less impact on their ability to carry out the immunisation programme. In addition, practices were required to anticipate the quantity of vaccine they would require and order this accordingly. It was found that estimates tended to be conservative to avoid unused vaccine and, as a result, where practices under-ordered, they ended up making do with what vaccine they had and did not necessarily vaccinate all patients at high risk. On the other hand, practices that over-ordered often vaccinated the most accessible patients rather than those who were most appropriate, in order to ensure all stocks were cleared. These findings highlight that increasing funds may not always be the best way of facilitating the translation of guidance but rather, re-allocation or more appropriate allocation of funds may also enable this[155].

The idea of 'raising awareness' is another potential means of facilitating knowledge translation[139,140,143,144,147,150,155,162,164,170,173,177,180,181]. This may be in the form of increased patient education concerning available treatments and what they should expect in terms of best practice or increased advertising and PR connected with the benefits of undertaking a specific course of action[150], [143,144,154,159,162,164,170,175,180,181]. Improved dissemination of the guidance recommendations to the health profession may also act as a facilitator[147]. 'Prioritising' recommendations, including through the use of incentives, is also identified in the literature as being a means of increasing uptake[135,136,143,145,148,159,164,168,177,180,186]. In a study exploring the use of joint treatment guidelines for primary and secondary care, one focus group participant suggested that healthcare professionals should be rewarded for using guidance, stating, *"One way is to impose the guideline, the other way is to make it tempting"[148].*

Other external influences to emerge as facilitators included endorsement from leading figures to highlight its importance[147,171,172,182,184], as well as a reduction in the quantity of guidance recommendations to create a higher sense of importance[139,150]. These concepts are closely linked with the theme of simplicity of goals and priorities.

'Monitoring' also emerges from the literature as an external facilitator. This may be through mechanisms such as audit and feedback, practice inspection, action planning or goal setting[136,138,139,148,149,154,159,162,165,172,187]. There is a belief that the ability to actually see that changes are beneficial or having an impact may enable guidance translation. In a study by Kasje and colleagues, specialists reported that feedback on performance was useful in stimulating change. One example was the scenario of a healthcare professional, who always prescribes the most expensive drug. It was felt that the prescriber should receive feedback on this, so that they have an opportunity to reflect upon their normal practice[148].

Finally, the literature suggests that 'reassurance' is important in facilitating the implementation of guidance. This may be in terms of endorsement from key stakeholders and peer support[147,171,172,182,184,187], as well as the belief that the proposed changes will improve patient care[146,148,165,167,169,182,183,186], will not be disruptive[159,180,182], may be cost effective[187] and may actually save time[143,159]. The reassurance that following the recommendations will protect healthcare professionals in relation to medico-legal issues may also encourage implementation[144,152,177,185,186].

(2) Organisational Culture

The second major area identified from the literature was organisational culture. As mentioned in Chapter 1, defining what is meant by the 'organisational culture' is complex as multiple definitions exist[32,188]. Schein describes organisational culture as:

"the pattern of shared basic assumption – invented, discovered or developed by a given group as it learns to cope with its problems of external adaptation and internal integration – that has worked well enough to be considered valid and,

therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems."[34]

Perhaps a more straightforward definition may be that of Deal and Kennedy who define it as *''the way things get done around here''*[189]. Mannion and colleagues describe organisational culture as an anthropological metaphor used to inform research and consultancy to explain organisational environments[31]. A consistent element across these definitions is that an organisation's culture refers to many factors which impact upon those working within it. This may include their beliefs, norms of behaviour, routines, traditions and sense-making[35]. This highlights the importance of an organisation's culture as a means of understanding and interpreting the factors that prevent and those that enable knowledge translation, and links back to Konteh's definition of culture as being *''a lens through which an organisation can be understood and interpreted.''*[41]

It is also important to differentiate between the terms 'organisational culture' and 'organisational climate', which are often used interchangeably in the literature. Culture, refers to the deeper values and assumptions rather than the surface perceptions that are the focus of climate studies while culture is not just observable in social life but is a shared cognitive and symbolic context within which a society can be understood[30]. The RHCC model includes 'supportive organisational culture' as a key element in explaining why some organisations are supportive of change. The literature reviewed for this body of work recognises that an organisation's culture can have both supportive and unsupportive aspects in relation to the translation of guidance, and so in order to capture all of these elements, this theme was re-labelled, simply 'organisational culture'.

Barriers

A number of aspects of an organisation's culture emerge from the literature as being potential barriers to the translation of guidance. Firstly, the general 'attitude' of the team that makes up an organisation may act as a barrier. Team members may not be convinced of the benefits of following the guidance or feel

reluctant to make changes to their normal routines or habits[138,139,141-148,153,154,156-160,162-164,166-169,171,173,175-177,179,181,182,184,186]. It emerged that some healthcare professionals also feel that decision making is not part of their role[135,144,146,150,158,166,169], and believe they know what they are doing, and do not need additional guidance[146,148,164,168].

In a study looking at the reasons why practices comply with British Asthma Guideline recommendations, team members' attitudes were identified as a barrier to change[158]. Some GPs and nurses reported having doubts about whether following guidelines would actually improve asthma diagnosis and expressed scepticism about the benefits, commenting that objective diagnosis was *"not always necessary"* and *"cannot substitute for clinical judgement"*. Participants also appeared unconvinced of the benefits of developing an asthma action plan. Findings suggested that these healthcare professionals were unconvinced that action plans were applicable in primary care. GPs felt that this type of self-management education was actually the responsibility of the nurses. Nurses however, reported feeling unsupported in assuming this role because GPs were unaware of management plans being used[158]. These findings were echoed by Kasje and colleagues, who concluded that doctors need to have a more positive attitude towards guidelines before they are likely to adopt them, and that a belief that the recommended practice will lead to improvements, is an essential element of this[148].

The literature also suggests that healthcare professionals may have 'perceptions about patients', which can influence whether they follow recommendations. This includes their beliefs about how patients will react to them taking a particular course of action and patients' knowledge and understanding of best practice guidelines[141,143,145,147,152,153,155,157-159,162-169,171,177,179], a fear that by following a particular course of action they may stigmatise the patient[144], and also a perception that they may jeopardise their relationship with the patient, as they want to be seen by the patient as administering best practice[141,143,144,153,159,164,166,167,169,172,182].

A Canadian study identifying the barriers reported by GPs when managing tuberculosis (TB) found that two of the main barriers for GPs were patient non-compliance and the stigma that is attached to having TB[144]. Focus group data identified that there is a tension between what physicians believe they should be doing to prevent TB effectively and the realities of specific situations. The study found that in some cases new immigrants to Canada feared that an active diagnosis of TB may result in deportation and this created an added pressure on GPs when diagnosing and treating the disease[144].

'Poor communication' within and outside the practice team is another element of an organisation's culture seemingly acting as a barrier to the implementation of guidance. This includes poor communication within the team itself, perhaps due to a lack of team meetings or poor internal dissemination strategies, and poor communication with patients and with external organisations such as secondary services[135,145-147,150,160,163,164,166,169,170,176]. As such communication appears to act as both a barrier and a facilitator to knowledge translation, and is a factor that is also closely associated with relationships.

Moffat and colleagues identified the importance of communication in providing optimal asthma care[163]. They found that poor communication limits a healthcare professional's ability or willingness to identify a patient's health beliefs, to explore the patient's level of education and level of confidence in managing their asthma. They suggest that ultimately poor professional communication leads to poor asthma management for patients with difficult asthma or difficult lifestyles[163]. This was also a theme identified by Hobbs and Erhardt, who suggested that communication between physicians and patients is paramount in any kind of prevention plan, yet often when healthcare professions are restricted by time, communication is one of the first aspects to suffer[164].

As previously mentioned 'personal expectations' can act as an external barrier but this may also stem from an organisation's culture. This is in terms of how emotions can play a part in forming an organisation's culture and may result in team members feeling overwhelmed at what they may perceive to be large

scale change, creating a massive upheaval in their normal working routine. This may in turn lead to team members experiencing high stress levels, which can in turn, reduce a healthcare professional's ability to change practice[141,169,176]. Another barrier to emerge from the literature is a 'lack of protected learning time' for the team, resulting in team members being unable to undertake relevant training to enable them to acquire the skills required to follow new recommendations[145,156,160,168,172,179]. Team members may also lack the time to keep apprised of new evidence.

Finally, if there is a 'lack of organisational systems' in place within a practice this may also impact upon knowledge translation[144-146,158,160,172,177,181]. This may be in the form of poor administrative systems or clinical procedures. In a study exploring the barriers to detecting and treating hypercholesterolemia in patients with ischemic heart disease, Hickling and colleagues identified four key barriers, three of which were organisational[160]. They highlighted factors such as a lack of systems for identifying and recalling patients, poor systems for processing test results and a general lack of practice protocols[160].

Facilitators

Unsurprisingly, having good 'organisational systems' in place is considered a facilitator to the translation of guidance. Using innovations such as web-based guidance, decision aids, IT systems allowing linkage to patient records, reminder systems, mobile phones and practice protocols are all considered to enable the implementation of changes in practice[134,137,139,143,152,155,158,159,162,168,175,177,179-183,190]. However, contradictions exist in the literature concerning how much of a facilitator this is, with attitudes towards such innovations varying greatly. An example of this is a 2011 Cochrane systematic review that stated that while decision aids have no adverse effect, future research is required to clarify their effect on adherence[191]. Some healthcare professionals consider themselves to be IT literate and support the use of innovations within the workplace, whereas others are reluctant to move in this direction, citing time to learn new software and cost implications as barriers.

Another facilitating aspect of organisational culture is the concept of 'team work'[137,138,142,143,145,146,149-151,154,159,170,177,179,180,182,185]. Team work is a common concept that emerges across themes and is also associated with 'positive communication' within the team[138,145-147,149,158,159,163,164,167,169,170,178,181,182,190]. The idea of a team working together, with mutual trust and respect for each other, where all members are utilised to the best of their abilities, resulting in team members having a sense of empowerment, is considered to enable the implementation of guidance within a practice setting[142,145,146,159,165,175,180,182,185,190].

This was highlighted in a study by Wiener-Ogilvie and colleagues, examining the practice characteristics that impact upon the implementation of asthma guidelines[145]. Using qualitative comparative case study methodology, they found that in their sample of practices, team work and organisation of care played a key role in guideline implementation. In particular, the distribution of skills and knowledge across the team, delegation of tasks and team communication was crucial. This was highlighted by a quote taken from one of the case study focus groups:

"We just went over the local hypertension guidelines recently…and we discussed them and everyone has different ideas and I think the thing that is key, sitting down and saying…I think a lot of time with guidelines it is about agreeing that in the practice you're going to do them." [39]

Finally, having a supportive 'learning environment' emerges as an enabler to the implementation of new guidance or recommendations. Factors that describe a supportive learning environment include: provision of protected learning time for team members; ability to undertake Continued Professional Development (CPD); attend conferences and read academic and clinical journals[137-141,144,145,149,150,152,157,158,162,164,167,170,172,179,182,190].

Other factors that have been demonstrated as being effective are: in-house training; involving the whole team within the practice setting; using guidance as the basis for training events to show how it can be adapted into routine practice and the use of audit and feedback[136,140-142,145,148,162,164,165,171,172,182,186,190]. It has

been suggested that rather than thinking about implementing guidance as a single task, it should be considered as a continuous systematic cycle of quality improvement[192], thus creating an organisational environment receptive to change. This is reinforced by the findings of a recent study exploring the complexities within healthcare systems and how healthcare professionals who feel empowered rather than working within micro-managed hierarchies are more likely to mobilise change. (Braithwaite et al. 2009)

(3) Leadership

Another consistent theme to emerge from the literature centres on leadership. This can be considered as both a barrier and a facilitator to knowledge translation depending upon the leadership style utilised. Strong leadership has been identified as being crucial in driving forward change[193]. Multiple definitions of leadership exist. A useful definition provided by Stogdil regards it as *''...the process of influencing the activities of an organised group in goal setting and goal achievement''.* Stogdill suggests that leadership has three aspects: how an individual shapes and directs the behaviour of others, the context in which other members of the group are seen as subordinates to be influenced, and the criteria that determines whether leadership is effective in terms of achieving goals[193].

It is important to differentiate between leadership and management. This is particularly true within primary care organisations, where a practice management role may exist but this individual may not necessarily be considered to be the leader. Leaders, it is argued tend to have a more strategic role, developing overarching visions, driving forward new initiatives and influencing others to sign up to their visions, inspiring them to overcome any barriers[194]. Managers, on the other hand, tend to be controllers as they monitor progress, solve problems and deliver order and predictability[194]. In reality however, the role of managers and leaders is blurred, and these distinctions and definitions do not neatly translate into practice[195].

An example of this can be seen within general dental practice where the 'leader' may be either clinical, often the principal dentist or practice owner, or administrative in the form of a practice manager or receptionist. In some cases, there may be two leaders within a practice, one leading clinical aspects and another leading administrative functions. It could be argued that on further examination, the clinical role is more in keeping with the defined role of a leader, in terms of shaping the strategic vision for the business and developing and driving forward new initiatives, and the administrative role is more about controlling and monitoring the change process, solving problems and feeding back to the clinician[193].

Differing leadership styles also exist, for example, there are task orientated leaders, who plan ahead and structure their teams' tasks, or those who are more relationship orientated, and listen to team members and encourage participation. Leadership can also be considered transactional, where negotiation and bargaining feature, and formal authority is used rather than transformational leadership which is more interactive, involves power sharing and aims to motivate and inspire[196].

Barriers

The main barrier emerging from the literature search concerning leadership relates to the concept of 'poor leadership'. This is characterised by two opposing ends of a spectrum: a complete lack of leadership[135,146,197], or in contrast, leadership that is too dominant[145,146,178]. Within healthcare teams there is the potential for tensions to exist between professional and organisational goals, having professional autonomy but maintaining organisational performance control as well as the need to maintain stability whilst at the same time adapting to change and encouraging development.

Organisational features, such as internal hierarchical structures[174], a lack of delegation[145,176], and a lack of internal dissemination strategies[147,149,150,162,168,173,181], are considered barriers to the implementation of guidance. An example of poor internal dissemination is evident in a study

examining guidelines for the management of diabetes from a nurse's perspective[149]. Participants in the study reported that guidelines were not readily available to all healthcare personnel in-out patient departments, and when asked by a researcher *"Did you know that they existed before I gave you that copy?"* the participant answered *"No"*. This is closely associated with the theme of organisational culture and how the culture of a practice and, in particular, its leader, may influence the structure, communication style and delegation processes that exist.

In Hroscikoski and colleagues study exploring the challenges of the implementation of a Chronic Care Model[146], they found that barriers to change included leaders who failed to develop a practical vision for change or those who involved themselves less in the process[146]. In addition, leaders' characteristics such as their age, gender or ethnicity can act as a barrier[134,138,146,152,157,171,198]. More recently qualified health professionals may find it easier to implement recommendations that they have recently been taught as part of their training whereas those who undertook their training prior to new guidance may find this a barrier and hence struggle to lead by example. The results of a study exploring the factors that affect physician adherence to breast cancer screening guidelines suggest that female physicians, younger physicians as well as obstetricians and gynaecologists, are more likely to follow the recommended guidelines than other healthcare professionals[152]. However, another study proposed that because some female GPs work part-time, while they may place high value on using guidelines in principle, it may be difficult for them to put this into effect, perhaps for practical reasons, such as the need to share consulting rooms with other GPs and hence do not have the guidelines or other required resources to hand[134].

Facilitators

Across the literature it is not surprising to find that 'positive leadership' is considered a facilitator to knowledge translation[137,142,146,159,178,184,190]. 'Positive' leadership is described as involving good internal dissemination strategies[147], and empowering team members through the use of flatter organisational

structures and appropriate delegation of tasks[145,146,148,159,165,175,180,182,184,185,190]. Key leadership qualities reported include: the ability to manage uncertainty and complexity; tolerate pressures and stress; and be able to manage team members both up and down the practice hierarchy[196]. In an Estonian study exploring changes in primary healthcare effectiveness in terms of improvements in managing key chronic conditions, strong leadership was acknowledged as being critical[137]. They found that it was crucial that *"Important people were in the right place at the right time",* echoing the findings of Pettigrew and colleagues[7]. It was reported that they provided stewardship and acted as role models to develop around them a group of able professionals to implement the reforms[137].

This notion of having 'key people leading the change'[7] links with the concept of having local champions or opinion leaders who take responsibility for implementing changes and drive initiatives forward. The existence of such people is considered to facilitate the translation of guidance in practice[177,182,184]. This was evidenced in a US study examining physicians' preferences for guidance format, placement, content, evidence and learning strategies in different clinical environments[182]. The findings suggested that in addition to Continuing Medical Education, physicians are persuaded by their colleagues to use guidelines in practice, highlighting the effectiveness of healthcare professionals championing guideline implementation[182].

Davies and colleagues explored the role of clinician leaders in quality improvement initiatives in their Health Foundation commissioned report, reviewing the literature connected with healthcare professionals' views on quality improvement initiatives[199]. The review noted that recent changes to UK policy and legislation, as well as the introduction of new quality improvement initiatives, have highlighted how important clinician engagement is. However, the review findings suggest that there are tensions between the clinical and leadership role(s) of healthcare professionals, particularly doctors, where some believe they do not possess the necessary skills to lead quality improvement initiatives. The review highlighted that there is a current belief that all doctors should be leaders quoting the following statement from the NHS Institute for

Innovation and Improvement: ‘*‘Doctors have a legal duty broader than any other health professional and therefore have an intrinsic leadership role within healthcare services[200].’’*

In addition, the literature suggests that ‘team work’, utilising the whole team, ensuring team members are involved in decision-making and are delegated responsibility, where appropriate, to create autonomy also contributes to the translation of guidance[137,138,145,146,149-151,154,159,170,177,179,180,182].

(4) Change Context

Implementing guidance into routine practice can be viewed as a social process intertwined with the context within which it takes place[201]. Context consists of a range of variables and should not just be considered as merely a ‘backdrop for implementation’[202]. Pettigrew and Whipp highlighted the important of context as far back as 1991 in their ‘content, context and process’ model of strategic change[203]. This model was the starting point for the RHCC Model, which Pettigrew, Ferlie and McKee developed and extended for use in a healthcare setting[7]. In terms of implementation research, context may be described as a set of circumstances or unique factors that surround a particular implementation effort[204].

Barriers

Two inter-linked barriers emerge from the present review of the literature in relation to the context of change and knowledge translation. Firstly, the ‘patient profile’ of an organisation may act as a barrier to the translation of guidance[162,163,169,171]. This relates to how the spectrum of patients seen by a particular healthcare organisation may impact upon a healthcare professional’s ability to adapt recommendations to their patients. It is reported that patients have varying knowledge about best practice recommendations, varying understanding of why they were developed and differing views about the implications, all of which may impact upon their attitude towards these recommendations. In addition to this, patients’ cultures vary and not all patients have backgrounds in Western culture. The concept of self-care and taking

responsibility for one's own health is a central feature in Western culture but non-Westerners expect a more authoritative doctor–patient relationship[169].

It is also the case that some patients are unable to communicate clearly what their complaint is and this may also impact upon the professional's ability to follow a distinct set of guidelines. Patient compliance also varies[141,144,145,147,154,155,160,162-165,169,172,175-177], as does their level of knowledge and understanding[144,145,160,163,167,169,175-177] and these factors are likely to be interlinked. These barriers were highlighted in Moffat's study, where healthcare professionals reported the requirement for flexibility, when following guidelines so as to take into account the individuality of each patient. In this study one participant commented, *"you have a feel for the patient first and then maybe fit in the guidelines around them".*[163]

'Practice context' and geographic locality may also act as a barrier to the implementation of guidance[146,147]*.* This includes the practice setting, its socio-economic status, rurality and practice size. 'Practice context' is closely related to 'patient profile', with factors such as the socio-economic status of an area potentially impacting upon patient's level of education, and hence their knowledge and understanding of healthcare recommendations. The rurality of a healthcare organisation may also act as a barrier. For example, if a practice is particularly remote it may be more challenging for healthcare professionals to attend training courses or to source recommended materials. Online training courses and web based resources however, may act as facilitators to overcoming this in some cases.

Jackson and colleagues' study exploring the barriers faced by GPs when managing TB highlighted some of these practice context factors[144]. The socio-economic status of patients was noted to create obstacles to the best management of TB. One example of this was when a specialist decided not to follow best practice guidelines in the case of a political refugee, who did not have health insurance, as it was believed that the patient could not afford the procedure. This study also noted that the size and structure of a practice may

reduce effective management of TB. Family physicians see many different disorders and the larger the practice the greater the spectrum of patients that may be seen. Healthcare professionals generally see few, if any active cases of TB, and so as one participant commented, it may not make a lot of practical sense to put a lot of effort and energy into knowing TB guidelines in detail[144].

Facilitators

A view espoused in the literature is that 'patient education' can facilitate knowledge translation[143,144,158,159,162,164,170,175,177]. This involves increasing patients' understanding of what best practice is, why healthcare professionals should follow this advice and encouraging patients to ask questions if they feel best practice is not being provided.

'Flexibility' is another concept considered to enable the implementation of guidance[139,148,157,162,165,167,169,175-177,186]. This is in terms of how flexible the practice context is as well as how flexible the guidance recommendations are, in order for them to be customised to that particular context. Lugtenberg and colleagues' 2011 paper reporting on GPs perceived barriers to guideline adherence, highlighted that GPs often have difficulties balancing the needs of individual patients with the aggregated needs of the population as a whole and, as a result, end up having to deviate from the guidance[175]. The authors recommend that in order to address this, tools, such as decision aids, be used to support the flexible use of guidance in practice[175,177]. Furthermore, a focus group study examining the characteristics of communication guidelines that facilitate or impede guideline use, emphasised that different situations require different approaches[176]. Study participants stated that most recommendations in guidelines are not suitable for every situation and the suggested sequences advocated are often not appropriate for particular consultations. One GP commented:

"I think that the model can be very helpful for a classic or complicated consultation comprising a lot of different aspects, but whenever you're dealing with only a part of the problem you won't do that[176]."

The study concluded with the recommendation that different guidelines should be developed for different types of patient, that they should encompass different courses of action depending on the situation and illustrate the consequences of non-adherence[176]. The authors highlighted the potential benefits of the ability to customise or tailor guidance recommendation to given contexts.

Finally, increased 'access to external support and facilities' to enable healthcare professionals to follow recommendations, emerged from the literature as a facilitator to the translation of guidance[136,155,165,170,177,181,182]. The literature suggests that healthcare professionals can be hampered because they do not have access to appropriate referral services or support from local health boards or hospitals. In a study exploring the barriers and facilitators to the implementation of guidelines on uncomplicated urinary tract infections, a lack of resources arose, with recommended drugs not being available for prescription. The authors recommended increased availability and pilot testing of guidance locally to ensure national guidance are applicable and resources are available[181].

(5) Simplicity of Goals and Priorities

In common with the description of this category within the RHCC model, the theme of simplicity of goals and priorities here refers to the ability of guideline users to narrow down or pin point the recommended changes into a set of key priorities that are easily transferable.

Barriers

In some cases, 'guidance format' is considered a barrier to implementation. Complex documents, containing too many recommendations, using hard to follow terminology or excessive acronyms can make it more challenging for healthcare professionals to follow recommendations[134,139,141,143,144,146-148,150,153,158,160,163-168,171,173,176]. An example of this was in a study exploring the reasons for the failure of a randomised controlled trial to implement epilepsy guidelines[168]. Findings suggested that guidance format really influenced whether GPs would use or even read guidelines[168].

Another barrier identified from the literature is the concept of in 'guidance overload'. Having too many guidance documents, offering conflicting advice, can result in end-users being unsure how to prioritise and know which advice to follow[139,146,148,150,153,156,160,164,168,186]. A 2003 study reviewing the process by which mental health guidance is developed found that having a 'plethora of protocols' definitely acted as a barrier to protocol implementation[150]. They found that this overload led to healthcare professionals feeling overwhelmed, and the sheer number in existence made it much less likely for any single one protocol to be implemented[150]. One GP participating in the study commented: *"Staff are tired of lots of new initiatives being placed on them, this is another set of protocols being implemented – I think staff may be a little antagonistic.[150]"*

'Guidance overload' also emerged as a barrier in Williams and colleagues study. In this study GPs reported that the large number of guidelines, the quantity of mail routinely received and the time available to healthcare professionals to assimilate this information, made it difficult for them to keep on top of new recommendations[168].

Linked with 'guidance overload' is the notion of a 'lack of prioritisation' or any incentive or dedicated resources to encourage implementation[135,150,160,168,172,179]. The literature suggests that if there are too many recommendations and priority is not given to specific behaviours, this makes it challenging for healthcare professionals to determine those of highest importance. Some also believe that if no incentive is offered for following the recommendations, healthcare professionals will deem them to be of lower importance.

Facilitators

The notions of what would facilitate knowledge translation in terms of goals and priorities are the converse of the barriers. Firstly, in terms of the 'guidance format' healthcare professionals want to see guidance that is simple and straightforward, with a clear vision and objectives[134,135,139,143,144,146,148-150,154,162,164,165,167,168,171,181,182,186]. On the whole, they would prefer guidance in

an electronic format, giving them the flexibility to print a hard copy to refer to or prepare laminated sheets to be used in the surgery. In their study exploring GPs use of guidelines in consultation and their attitudes to them, Watkins and colleagues asked participants to respond to the statement, 'the one thing most likely to make me turn to a guideline is….'. Eighteen per cent of those who responded cited quality, clarity, simplicity and a short format. In addition GPs reported that flowcharts and guidelines that did not exceed one or two sides of A4 paper were preferable[134]. The authors made a number of recommendations in the light of their findings, which included ensuring that the guidelines are clear, authoritative and reputable; the language is simple enough to make it easy for GPs to share with patients, and clear enough to provide the basis of delegation to other members of the practice team[134]. These findings were echoed in Williams study with one participant commenting:

"…I think the SIGN works well because it comes out in a predictable format, and with a very nice summary; an attractive summary on the back. An attractive glossy brochure if you like. And it's quite easy to look at. They come out with the full details, which to be honest I rarely read, I just don't have time…I mean to be easy to use I think it needs to be on like one side of A4 and preferably coloured"[168]

Guidance recommendations are also found to be more likely to be followed if users believe that the 'implementation plan is realistic and achievable', this may be in a phased programme, introduced through stages or pilot schemes[137,146,180,187,190]. In Atun et al's study, the key elements of change recommended were kept simple and this attention to simplicity in the early stages was singled out by respondents as one of the key strengths of the recommended reforms[137].

Lastly, the literature indicates that 'prioritisation' is essential in terms of streamlining the quantity of guidance or number of recommendations, so that healthcare professionals can easily determine which changes they should implement first[135,136,143,148,158,159,164,168,177,184,186]. The NHS Centre for Reviews and Dissemination's 'Effective Health Care: Implementing clinical practice guidelines', states that the number of guidelines that can be assimilated by healthcare professionals or provider organisations at any one time is limited

and, therefore, it should be ensured that at local level these are prioritised to ease implementation[187]. Some healthcare professionals go as far as to suggest incentives should be offered to facilitate implementation, or they should get some kind of reward[148]. In one study specialists in cardiology and gastroenterology espoused the need for financial incentives, feeling that they should get some kind of reward for using the guidance. It was suggested that this could be allocated to conference fees or the inclusion of an extra assistant in the team[148].

(6) Quality and Coherence of Guidance

As described earlier, this category has been re-named 'quality and coherence of guidance' rather than 'quality and coherence of policy', given that the literature review is specifically focussing on the implementation of guidance.

Barriers

The main barrier identified in the literature was found to be the notion of 'guidance credibility'. This includes the belief that some guidance is not based on robust evidence, is not kept up-to-date or in line with current evidence, or is of poor quality[135,139,143,145-148,153,156,158,160,163,166,167,169,171-173,177,186]. The literature also raises a concern that those involved in the development of the guidance may not be credible or appropriate for the role, and that there can be a general distrust about what the real objectives of guidance are[143,148,186].

This was one of the major themes to arise in Carlsen and Norheim's paper exploring GPs attitudes to the use of guidelines[143]. They stated that it is common for GPs to have a lack of trust in recommendations and, in particular, be concerned that economic motives may overshadow clinical considerations. Participants reported a concern that guidance driven by the government may be designed for cost control rather than best practice. In addition, even where healthcare professionals agree with the rationale behind the guidance, there is still a fear that the economic evaluations undertaken are too simplistic, and do not adequately reflect the resource implications for practice. This is in line with

earlier observations about structural and resource issues and impediments to implementation, and is reflected in this participant's comment:

"The problem with this type of guidance from the state medicines agency is that nobody counts the extra doctor time used. How much extra treatment costs does the welfare officer get for appointments and fees for doctors using time on this?"[143]

'Format of the guidance' has been reported as a barrier in relation to quality and coherence[134,139-141,143,144,146-148,150,153,158,160,163,165-168,173,176]. Many of the same elements feature as in simplicity of goals and priorities, such as the guidance being overly complex or confusing, and the use of terminology, which makes it challenging for the users to understand.

The ways in which guidance is 'externally disseminated' also emerges from the literature as a barrier, particularly if the guidance recommendations fail to reach the intended users[147,149,150,162,168,173,181,182]. Cabana and colleagues review of why physicians do not follow guidelines, yielded seven general categories of barriers, one of which was lack of awareness[173]. This lack of awareness also emerged as a key barrier to guideline implementation in Lugtenberg et al's study[176]. Ricketts and colleagues' study evaluating the development, implementation and impact of protocols between primary care and specialist mental health services, found that inadequate dissemination of protocols was a common barrier[150]. This is a particular issue when only one copy of the guidance is sent to a practice and there is a reliance on one individual to disseminate recommendations to the rest of the team. This study also highlighted that protocols are often distributed without any clear explanation of the rationale behind them. One behavioural psychotherapist taking part in the study interviews commented:

"I have only received two of the protocols. These were communicated via post with no explanation of why I had received them or what I was being asked to do with them[150]*."*

It may therefore be the case that the role of technology has an important role to play in the dissemination of guidance in order to improve the uptake of new guidance and recommendations.

Finally, there was evidence in the literature that a 'lack of flexibility' in terms of how healthcare professionals should implement recommendations may hinder their transfer into routine practice[138,139,143,144,148,150,156,162,172,175,176,181,184,190]. As discussed this also links with the concept of the 'change context' and the influence that 'flexibility' within a practice setting or within the context of the guidance recommendations may have on the implementation of guidance. If potential users believe the guidance is not transferrable to their particular practice context and spectrum of patients, or if they feel the recommendations do not allow them enough flexibility to adapt them to their particular context, then it is less likely they will make efforts to implement them. Cranney and colleagues' qualitative study exploring why GPs chose not to implement evidence based guidance, highlighted that GPs feel that guidelines are often developed based on patients participating in clinical trials, based on 'ideal' practice[172]. Hence it was felt that in some cases, this does not translate to 'real world' practice, where very different demographics come into play[172].

Facilitators

As mentioned when discussing the 'change context', one potential way of overcoming these barriers is to build 'flexibility' into recommendations and allow healthcare professionals to customise or adapt them to their local practice setting and patients[139,143,144,148,157,162,165,167,169,176,177,186]. A study exploring GPs views on clinical guidelines for the management of depression, supports the view that healthcare professionals are concerned about the flexibility available to them[139]. In this study, one participant commented that the guidelines recommend waiting for two weeks before referring the patient, but questioned the rationale behind this if they know the patient is depressed. They argued it was wrong to leave the patient miserable for longer than necessary before taking action. In this study, GPs also expressed concerns about the legal implications of not following guidance rigidly, which may result in defensive

practice rather than best practice for patients[139]. This also relates to the notion of environmental factors previously discussed in relation to external influences. Barriers that arise, as a result of pressures experienced from legislation and regulatory bodies, can also result in defensive practice, acting as a barrier to the translation of guidance.

Another recurring theme is that of 'guidance format' and how that can also act as a facilitator to guidance translation. The literature suggests that guidance should be simple, straightforward and available in a range of accessible designs[134,135,137,139,143,149,150,152,154,155,158,159,162,168,175,177,179-181,190]. The literature also proposes the use of flow charts, checklists, algorithms or laminated sheets that can be stuck up on surgery walls. As previously mentioned, challenges around dissemination of guidance may be overcome through the use of other innovations to facilitate implementation such as mobile phone applications, decision support aids, prompt systems or audit packages[134,137,139,143,152,155,158,159,162,168,175,177,179-181,190].

The literature also highlights the notion of 'credibility' of the guidance. There is a consensus that guidance recommendations should: be of high quality, credible and based on current evidence;[134,142,147,148,162,167,169,171,180,184,186] be kept regularly updated[143,148,177]; and be produced by recognisable guidance development bodies, which are recognised and supported by professional groups and peers[139,147,171,172,182,184]. Recommendations that are consistent[146,148,169,185] and believed to be patient-centred[165,167,182,183,186,187] are likely to encourage users that following them will result in improved patient care.

Lastly, findings from the literature review suggest that the production of guidance documents should be 'collaborative'. Recommendations should be produced through engagement with both patients and health care professionals to ensure all recommendations are the result of consultation and collaboration with all of the key stakeholders that will be affected[139,143,148,165,169,171,175,182,186 177]. In a study exploring clinical guidelines for the management of depression, GPs strongly felt that the recommendations lacked flexibility to use with their

spectrum of patients, and that greater involvement of GPs in the development process would be one means of addressing this problem[139]. There is a sense that greater involvement of GPs would result in a sense of 'Guidelines for GPs developed by GPs' resulting in a stronger sense of ownership within the profession[139]. In addition, greater patient involvement would help to ensure that guidance reflects the patient perspective and may improve patient education[175,177].

(7) Relationships

The original RHCC model included the categories 'managerial-clinical relations' and 'co-operative inter-organisation networks'. The literature reviewed for this study, however, shows that barriers and facilitators to the translation of guidance tend to focus on the internal relationships in an organisation. This includes relationships between all ranges of healthcare professionals within an organisation such as, managers and administrative team members, clinical and non-clinical team members, as well as relationships between healthcare professionals and patients, and between healthcare professionals and other external agencies, which may influence how guidance documents are implemented. This is reinforced by current evidence which suggests that professional boundaries can impact upon communication, collaboration and team work all of which may jeopardise the provision of high quality health care[205].

Barriers

Starting with 'relationship within the healthcare team', barriers exist in relation to working together as a team, a lack of clarity of roles within the team, members lacking autonomy as well as a lack of delegation[145,146,158,176]. These barriers can result in low morale within the team, with no one person taking or being delegated responsibility for putting guidance into practice[145,176].

Barriers were also identified in terms of the 'relationship between the healthcare team and the patient'[139,141,143-145,147,152,153,157-159,162-169,171,177,179,182]. Some healthcare professionals fear that by following recommended guidance they

may jeopardise their relationship with the patient by suggesting or undertaking a course of action they perceive the patient will be unhappy about. If, for example, guidance leads to a rationing of services the importance of maintaining a good clinician-patient relationship is often cited as being more important than following the guidance[153]. There may also be a fear of embarrassing or offending patients. An American primary care study looking at the implementation of alcohol screening guidelines for patients with hypertension found resistance from providers and support staff to ask questions related to alcohol intake for fear of offending the patient. There was also concern raised that screening might be offensive to non-drinking patients who were abstinent due to religious reasons[159].

Concerns about patients' confidentiality[139] as well as a fear of stigmatising the patient[144] also exist. In the same study, participants reported an apprehension that insurance companies may decline reimbursement to certain patients, based on responses to screening questions, as well as issues connected with the stigma associated with the diagnosis[159]. This notion is associated with patient barriers that exist under the 'external influences' theme and also in terms of the impact of the patient in terms of the 'change context'.

The 'relationship between the healthcare organisation and other external organisations' may also play a part in affecting how an organisation implements change[143,148-150,169,176]. This may be in the form of relations with other practices, hospitals, specialist or referral services or other service(s) providers that are relied upon, such as equipment suppliers, cleaning services, and decontamination facilities to name but a few. The relationship between healthcare professionals and guideline developers may also have an impact on implementation. As mentioned under the quality and coherence of policy theme, the 'credibility of guidance' is crucial in the likelihood of it being followed, and therefore, if healthcare professionals view guideline developers as being competent and credible, this may enhance their view of the documents they produce, while if they have a poor relationship or view of the development groups, this is likely to act as a barrier to implementation.

Finally, 'poor communication' was identified as a key barrier that exists in relation to all of these relationships, be it within the team or with external groups. Communication as a barrier also emerged in terms of the organisation's culture. Such barriers highlighted in the literature include how members of the team communicate with each other, how they communicate with patients as well as how they communicate with secondary services. This may be in terms of how team members informally communicate with each other but also in terms of systems that exist within organisations to facilitate communication and dissemination with a team, and processes that are put in place to produce efficient working. Ricketts and colleagues' study demonstrated how the lack of communication and understanding between primary and secondary care was seen as an important barrier to the implementation of protocols[150] with one participant commenting: *"Protocols are no substitute for a good and close working relationship between GPs, consultant and community teams[150]."*

Facilitators

Unsurprisingly, 'positive communication' was found to enable guidance implementation. This includes regular full team meetings, providing a forum for all members of the team to contribute towards decision making and discussions on how best to implement a change within their individual setting, and the impact it may have on their role[138,145,158,159,163,164,167,178,181,190]. The literature suggests that engaging team members in reflexivity, such as taking part in audit and feedback or interactive training sessions, can also facilitate change[136,148,149,159,162,165,172,187]. How the team communicates with patients[169,182], for example, how they go about ascertaining information about health status, smoking or dietary information also emerges as influential. The literature highlights the importance of informal discussions between team members and how this can inform the ways in which change should be implemented.

As discussed under the organisational culture theme, other facilitators include, 'team working and team based learning'. In the study exploring the implementation of alcohol screening guidelines, findings suggested that the

involvement of all staff was crucial to the success of the initiative[159]. Providers, medical assistants and nurses were included in the process. Initial screening was undertaken by nurses or medical assistants, and if the screening was positive, the provider would then complete the diagnostic stage. This initial screening process saved the provider a significant amount of time and it gave a greater level of autonomy to the nurses and medical assistants[159]. The literature also highlights the importance of mutual trust and respect within a team in order to create healthy working relationships[145,146].

The final facilitator in connection with relationships is the concept of 'collaboration'. Linked with the notion that collaboration can impact on the quality and coherence of guidance, this includes healthcare professionals becoming more involved in the development of guidance, whether by means of a consultation forum or feeding into the guidance development process in other ways. It may also mean involving patients in the development and implementation of guidance recommendations so that their attitudes and concerns are taken forward so as to reduce some of the healthcare professional's fears of upsetting or jeopardising the patient-clinical relationship[139,143,148,165,169,171,175,177,182,186].

3.14 Literature Review Update: March 2016

As mentioned, an update to the literature review in March 2016, identified one additional paper which met the review criteria. This paper (Hoff, 2013) reported a multi-case qualitative comparative study to explore the implementation of a patient care model in primary care. Fifty-one interviews were undertaken with physicians, nurses and clinical support staff to gain an insight into their experiences of care delivery. The key facilitators to emerge from the study findings in relation to implementing this model of care focussed on relationships (knowing the patient and having a relationship with them), communication (with the patients and their family), and leadership (through the use of protocols and work re-distribution)[128]. These findings were in line with the overall literature findings, and data from this study would not have generated any significant changes to the original review findings.

3.15 Discussion:

Exploring organisational change is complex due to the interplay of many variables, this is all the more so within a primary care setting, where these variables are intrinsically linked. This review was conducted following systematic review techniques and it is argued that given the breadth and depth of barriers and facilitators to implementing clinical guidance in primary care identified, it is unlikely additional themes would have emerged from reviewing further literature. The seven categories contained within the emergent 'Knowledge Translation in Primary Care' framework cover all features of primary care organisations, and having synthesised the data from all 56 papers, no significant new concepts were emerging, suggesting saturation.

Drawing together a comprehensive list of the barriers and facilitators that exist in relation to the translation of guidance in primary care is not new and has been undertaken by a number of authors[171,173,177,187]; however, examining these through an organisational lens and synthesising them using an organisational framework provides a means of exploring their impact on knowledge translation and the relationships that exist. It has also provided a platform to adapt and develop this framework in a way sympathetic to this field of literature and provides an opportunity for future use and exploration.

As has been demonstrated, there is considerable overlap and clear associations between the themes. These associations are demonstrated by the arrows linking the themes in the revised model illustrated in Figure 5. Some factors emerge from the synthesis as both barriers and facilitators to knowledge translation and span across more than one theme. Based on this review, it can be argued that the following overarching concepts or notions of organisational culture appear most influential on the translation of guidance in primary care organisations: (1) Communication, (2) Team Work, (3) Collaboration, (4) Flexibility (5) Prioritisation, (6) Guidance Dissemination and (7) Expectations.

Communication is one example which stems from both the organisational culture of a practice and also the relationships that exist, both internally and

externally. Although not explicit in the literature, it could be argued that communication methods are closely linked to leadership, where a leader is likely to set a precedent for how communication is managed. How a team works together and whether regular team meetings occur also appears to be influential. The ‘format’ of a guidance document also emerges as a potential barrier and facilitator to guidance translation. This highlights the importance of how recommendations are presented to end-users, in terms of dissemination and how they actually look. It could be argued that this links to communication as how the guidance is ‘communicated’ to the end-user is influential on its implementation. ‘Format’ is important in terms of ensuring recommendations are clear and labelled so that there is no confusion over the key priorities, and it is also important in relation to the quality and coherence of policy, in terms of ensuring guidance documents look professional, credible and reliable.

Team work and Collaboration also emerge as influential barriers and facilitators to the translation of guidance. It is particularly important that guideline developers work closely with those in a position to promote guidance, to ensure new guidance recommendations are given a prominent status, and that there is a limit to the quantity of guidance being produced at any given time. Collaboration includes engaging with patients, including patient representatives in guideline development groups and in the implementation process. This is an area of much debate, and firm conclusions on how best to maximise patient contributions are yet to be fully realised. There is also debate about who guidance documents should be aimed at, and whether they should be addressed to the patients rather than the health professionals or both.

Flexibility also emerges as having an important impact. There are two aspects to the notion of flexibility: firstly, the flexibility of an organisation to adapt to change, and secondly, the parameters of the guidance and whether it has been developed and introduced as being a flexible entity or as a rigid guideline to be implemented in a prescribed manner. The main factors to emerge from the synthesis as barriers, manifest themselves as forms of pressure experienced by those implementing the guidance, or expectations felt by either the healthcare

professional or the patient. Pressure experienced from patients is evident both externally to the practice but also within the practice context. These notions are very much interlinked as the ‘change context’ will influence the type of patient profile seen at that practice, and this is where flexibility in terms of how guidance should be adapted or tailored to a specific practice context, comes into play. The context of the practice, for example, whether it be in an affluent area or not, may influence the education level of the patient profile as well as their lifestyle choices. These factors can have a significant impact on a patients’ general health status and their motivation to improve it.

The notion of Expectations stems from external influences and can influence an organisation’s culture. This is important as it highlights the issue that personal expectations can be as a result of pressures felt from either within or out-with an organisation. Within an individual healthcare practice, the culture that exists and how change is managed can create pressures on the individual, which may impact on their ability to introduce change. Out-with the healthcare organisation, a whole range of environmental and stakeholder pressures can add similar stresses on the individual. It is interesting to note how these organisational level barriers to knowledge translation can emerge in the form of personal pressures, which have a negative effect on knowledge translation. It should also be noted however, that such expectations, felt either at a personal healthcare professional level, or as a result of the expectations that patients present with, may also have a facilitating impact on knowledge translation.

Finally, Prioritisation includes the use of incentives and endorsements and the way in which guidance recommendations are presented to the end-users. How to prioritise guidance recommendations is a factor within an organisation but is one which is also influenced externally, by not only the guidance developers, but also other restraining factors, such as access to resources and facilities.

3.16 Summary, Implications and Reflections

Seven factors emerged from the synthesis as influential in terms of knowledge translation and demonstrate the notions that exist around organisational culture within primary care organisations. Consequently, factors such as communication, team work, collaboration, flexibility, prioritisation, guidance format and dissemination, and an awareness of the expectations experienced by healthcare professionals and patients are all elements that influence and impact upon an organisation's culture and how they 'do things'.

It should be emphasised that the majority of studies included in this review were set within general medical practice, demonstrating that the majority of studies to date have focussed on the translation of medically focussed guidance, with an emphasis on exploring the views and perspectives of GPs and other medical professionals. Only one study identified focussed on Pharmacy[135] while one was set within General Dental Practice[157]. This demonstrates the need for further work within such primary care settings. Whilst it is fair to hypothesise that many of the barriers and facilitators to the implementation of guidance may be similar across primary care settings, there are significant differences between these organisations as previously highlighted.

Even within settings such as dentistry the context can vary considerably. NHS dentistry comprising a range of dental profiles, such as single or multi-handed, community or hospital-based, urban, rural or remote practices. General Dental Practitioners (GDPs) are independent small business people, who are free to establish a practice in any geographical location and to determine the quantity of NHS and private treatment they provide. Most dental practices provide at least some NHS treatment with the majority offering a mixture of NHS and private treatments. The NHS payment structure is complex and comprises approximately 70% of a GDP's income. The majority of patients, approximately 80%, are liable for a patient co-payment of the fee for service, based on the Statement of Dental Remuneration (SDR). Eligible patients pay 80% of the SDR cost up to a maximum of £384. Remuneration for the provision of private dental treatment is also complex with private patients being charged the full cost of

treatment, through a direct contract with the dental practice on a fee for service basis, or through private insurance schemes, such as Denplan. Other small primary care providers, such as pharmacy and optometry operate within similar conditions and general practice, and although quite different in respect of their financial structures, share many of the same organisational characteristics.

In addition to the financial differences, many structural variations exist. Some practices are owned privately with a single principal dentist as the business owner, others may be jointly owned by a husband and wife team or by a partnership made up of two or more dentists jointly running a business. In addition, salaried dental practices exist, where dentists have an employment contract with their local health board and are paid directly by them. These structural differences may impact upon a healthcare professional's ability to, or willingness to, implement new guidance recommendations.

Finally, the impact of standard setting, such as practice inspections, audit and CPD requirements, need to be taken into consideration. The requirement for inspections can vary dependent on whether practices are NHS or private and also on whether they are vocational training practices. This is another factor which must be considered when exploring the organisational factors that influence knowledge translation within this context. Furthermore, these elements are not only specific to general dental practice, making it important to differentiate them from the barriers and facilitators prominent in general medical practice, but some are also very specific to general dental practice in Scotland as opposed to the rest of the UK, and this must also be recognised and explored.

In order to explore these important differences, the findings of this literature review were used to inform the development of an interview schedule to examine these factors in greater depth within a dental context.

CHAPTER 4: DENTAL TEAM INTERVIEWS

4.1 Introduction

Seven themes emerged from the literature review as influencing the translation of guidance in primary care organisations. These factors were ‘communication’, ‘team work’, ‘flexibility’, ‘collaboration’, ‘prioritisation’, ‘guidance dissemination’ and an awareness of the ‘expectations’ experienced by healthcare professionals and patients. In order to explore these notions further, particularly within a dental context, interviews with team members from four dental practices in Scotland were conducted. These interviews provided an opportunity to build upon the literature review findings, and to examine these themes in greater depth. They also specifically provided an opportunity to explore the notions of organisational culture, which exist within dental practices, in order to inform the development of a dental team questionnaire.

4.2 Aim and Objectives

The aim of these interviews was to explore how the organisational characteristics of dental practices in Scotland influence the translation of guidance.

The specific objectives were:

1. To explore dental team members’ views and awareness of dental guidance;
2. To identify the key organisational barriers and facilitators to the translation of guidance;
3. To examine notions of organisational culture that exist within dental practices.

4.3 Methods

Design:

Semi-structured telephone interviews with a range of dental team members.

Setting and Participants:

The study took place in four dental practices in Scotland. All team members from each practice were invited to participate. Interviews took place between April and May 2012.

Recruitment:

Practices were sampled from a randomised controlled trial being undertaken by the Translation Research in a Dental Setting (TRiaDS) programme. The trial compared the impact of two types of educational strategy on the implementation of the SDCEP 'Decontamination: Cleaning of Dental Instruments' guidance[206] and collected self-reported compliance data in relation to key decontamination recommendations from 131 dental practices in Scotland. The day-to-day management of this trial had been led by the researcher, hence it provided a unique opportunity to recruit practices for whom we already held data in relation to compliance with guidance. For the purposes of recruitment to this study, practices participating in the trial were ranked in terms of their compliance with 13 key recommendations identified in the SDCEP Decontamination guidance. Full compliance was defined as carrying out all 13 recommended behaviours. Once ranked in terms of their compliance level, the top 10% (N=13) and the bottom 10% (N=13) practices were selected, with a view to recruiting four dental practices in total: two of higher compliance and two of lower compliance. All practices in the sample (N=26) were sent an information pack and invitation letter, informing them about the study and advising that a researcher was likely to contact them to discuss participation.

The researcher was blinded to the compliance levels of all practices in the sample and, therefore, randomisation within the sample practices (N=26) was undertaken by an independent experienced researcher within the TRiaDS office. Although this meant the researcher was unable to specifically ask questions about their compliance level it served to reduce researcher bias based on this during the interviews. The researcher was provided with a sample of four practices (two high compliance; two low compliance) to contact in the first instance. Shortly after the information packs were mailed, the researcher contacted the initial four practices by telephone to discuss participation. If a

practice was not willing to participate, the researcher advised the TRiaDS office and an additional practice was provided for the researcher to contact. This process continued until the researcher had successfully recruited two practices of high compliance and two practices of low compliance. Six practices were contacted in total before the targeted four practices were recruited.

In the four participating practices, all team members were invited to participate in the interviews. Discussion with team members about participation was facilitated by a practice liaison contact in each practice. A specific requirement of practice participation was that participants in each practice spanned a range of dental team roles, such as principal dentist/practice owner, dental nurse, Practice Manager/receptionist, plus one other, such as a vocational trainee dentist, a recently qualified dentist, a hygienist-therapist or an administrator. Interviews continued in each practice until data saturation was achieved.

Interview dates were arranged at times convenient to the practice and team members. If during the course of the interviews, other members of the dental team were frequently referred to who were not already due to participate in the interviews, the researcher explored the possibility of interviewing them. At the close of each interview, the researcher also explored with the participant whether there were any other members of the team that would be appropriate to interview so as to ensure a full picture of the practice was being developed.

Fourteen interviews were undertaken in total. Interviews ranged in length from 15 minutes to one hour. All practices were independently owned, general dental practices but varied in structure and character. One practice was fully private, except for child patients, who receive NHS treatment, one was fully NHS and the other two practices mainly provide NHS treatments (a minimum of 90%). The team members interviewed covered a range of roles within the dental team and comprised: six dentists, three dental nurses, one Practice Manager, two receptionists, one dental surgery assistant and one office administrator. Participating practices have been given pseudonyms for the purpose of presenting this data, as have any team members referred to in quotations.

In ‘Archibald Dental Practice’ N=4, of the 11 team members participated in the interviews. In ‘Black’s Dental Practice’ N=3, of the 11 team members participated. In ‘Campbell Dental’ N=3, of the 11 team members were involved and in Davidson’s Dental Care N=4 of the 14 team members who took part. A copy of the Interview Study Recruitment protocol can be found in Appendix 6. Table 4 below presents the breakdown of participants by professional role.

Table 4: Interview Participants by Professional Role

	Number (N/14)
Interviewees	
Dentist	6
Dental Nurse	3
Practice Manager	1
Receptionist	2
Dental Surgery Assistant	1
Office Administrator	1

Development of the interview schedule:

A semi-structured interview schedule was developed using the ‘Knowledge Translation in Primary Care’ model as a framework and refined using the literature review findings. Areas for discussion focussed on six categories: (1) Leadership, (2) Environmental pressure, (3) Organisational culture, (4) Relationships (within the dental team and with patients), (5) Quality and coherence of policy and simplicity of goals and priorities, and (6) External influences. Questions within each of these categories were developed based on the concepts to emerge from the literature. General demographical questions were asked in order to develop a full picture of the practice, its structure and systems; and dental team members’ general views and awareness of guidance, were also covered.

In order to pilot the interview schedule, the researcher discussed its content and delivery with key stakeholders including: guidance developers, health service researchers and healthcare professionals. The schedule was then piloted with three dental team members to ensure it was clear to the target population. Revisions to the schedule were made as appropriate.

A copy of the final interview schedule can be found in Appendix 7.

Analysis:

The framework approach to qualitative data management was adopted[207]. This methodology, from which 'best-fit' framework synthesis was derived, is an analytical process involving a number of distinct, yet interconnected stages. As discussed in Chapter 2, it is a matrix based method, using a thematic framework to organise and classify data according to key issues, concepts and emerging themes[207]. These interviews were exploratory, with the aim of identifying organisational barriers and facilitators to the translation of guidance; therefore, it was important that the method of analysis allowed for the identification of key issues through the use of the 'Knowledge Translation in Primary Care' model as well as recognising other emergent themes. The adoption of this approach ensured a consistent methodological approach was adhered to throughout the study and, hence, resulted in a more robust outcome when integrating findings from different stages of the study. Data management was facilitated by the use of QSR Nvivo 9 software. All interviews were recorded and transcribed in full. Audio recordings and transcripts were then uploaded into Nvivo to facilitate the analysis process. The Consolidated Criteria for Reporting Qualitative Research (COREQ) was employed to guide analysis and reporting of the data[208].

The five stages of data analysis using the framework approach were then conducted[207]. An initial familiarisation stage was undertaken, which involved the researcher re-listening to all interview recordings and reading through the transcripts and any notes taken at the time of the interviews. This provided the researcher with an opportunity to articulate and note down some initial thoughts and themes. The second stage was to identify an appropriate thematic framework. According to Ritchie and Spence, during this process the researcher can draw upon a priori issues and, therefore, the initial framework is often largely descriptive and rooted within these a priori issues[207]. The 'Knowledge Translation in Primary Care' model, was identified as this thematic framework.

The third stage includes indexing. This is where the ‘Knowledge Translation in Primary Care’ model is applied to the data and involves identifying sections of the text that are associated with the index headings. This process informed the development of sub-themes. In this case, the researcher used Nvivo 9 software to manage the process, and went through each interview transcript allocating sections of the text to specific index headings. Often sections of the text were aligned to two or more themes and considerable overlap in the indexing was encountered. When new sub-themes emerged, the researcher revisited previous transcripts to establish if there were common themes. This process ensured saturation of themes.

An example of the indexing system used can be seen in Appendix 8. This illustrates how the initial heading from the ‘Knowledge Translation in Primary Care’ model, ‘Change Context’ was used as a starting point and sub-themes were then identified. These included ‘guidance context’, ‘practice context’ and ‘patient context’. From these, further sub-themes were identified. Text was then applied to one or more of these sub-themes as illustrated in Appendix 9. This provides an example of the text from one participant’s interview which was applied to the sub-theme of ‘patient context’. Table 5 presents all themes and codes to emerge from the data.

Following this, the fourth stage known as ‘charting’ was undertaken. Having applied the data from the individual transcripts to the index, this information was then extracted from its original context and rearranged according to the key themes emerging from the data as a whole. This allowed comparisons to be made across practices, individual participants, and professional roles.

The final stage was to draw together the key characteristics of the data and interpret it as a whole. This involved comparing and contrasting experiences and perceptions and looking for similarities and differences across the data to provide explanations.

Table 5: Interview data presented in Themes and Codes

(1) Communication	Other	Awareness of guidance coming into the practice
	Other	Team members' knowledge about the practice
	Leadership	Communication
	Organisational culture	Communication
	Organisational culture	Dissemination of guidance within the practice
(2) Teamwork	Relationships	Breakdown of roles and responsibilities
	Relationships	Relationship with principal dentist
	Relationships	Relationship between team members
	Relationships	Staff turnover
(3) Flexibility	Quality and Coherence of guidance	Flexibility of Guidance
	Simplicity of goals and priorities	Ease of dissemination into practice
	Simplicity of goals and priorities	Innovations
	Organisational culture	Open to new ideas
(4) Prioritisation	Quality and Coherence of Guidance	Changing guidance
	Simplicity of goals and priorities	Easy changes to make
	Simplicity of goals and priorities	Guidance topic
(5) Collaboration	Relationships	Clinicians and non-clinicians
	Relationships	Relationships with or impact of external healthcare facilities
	External agents	Other organisations
	External agents	Patient compliance
(6) Guidance Dissemination	Quality and Coherence of Guidance	Changing guidance
	Quality and Coherence of Guidance	Clarity of guidance documents
	Quality and Coherence of Guidance	Credibility
	Quality and Coherence of Guidance	How guidance is disseminated
	Quality and Coherence of Guidance	Quality

	Simplicity of goals and priorities	Guidance format
	Simplicity of goals and priorities	Quantity of guidance
	Simplicity of goals and priorities	Simplicity of recommendations
(7) Expectations	Relationships	Patient impact
	Leadership	Following the rules
	External agents	Patient pressure
	Organisational culture	Planned changes
(8) Context	External agents	Resources
	Other	Part time working
	Other	Personnel issues
	Change context	Guidance context (content)
	Change context	Patient context
	Change context	Practice context
	Organisational culture	Nature of the practice
	Organisational culture	Tradition
(9) Leadership	Leadership	Following the rules
	Leadership	Identified leader
	Leadership	Decision-making
	Leadership	Delegation of tasks and responsibility
(10) Practice Systems and Learning	Organisational culture	Practice systems
	Organisational culture	Staff appraisal
	Organisational culture	Training

4.4 Results

Fourteen interviews across four dental practices were undertaken. Interview findings are presented firstly by practice. For each of the four practices findings are presented under three headings as follows:

(1) Practice characteristics

(2) Views and awareness of guidance

(3) Organisational barriers and facilitators to the translation of guidance

Similarities and differences both within and across practices and by professional role are then highlighted and examined with the discussion section starting on page 146. Figure 7 illustrates the key characteristics and findings by practice.

Archibald Dental Practice

(1) Practice characteristics

Archibald Dental Practice is approximately 90% NHS with one dentist providing private treatments. The team was made up of one full time dentist who is also the practice owner and two part-time dentists, one of whom also provides a practice management role. All dentists have been qualified for over 15 years. There were five dental nurses, two of whom work part-time, two hygienists both working part-time, but who also work in other dental practices, and a receptionist. The practice has been in the principal dentist's family for four generations and he now runs it with his wife, who is one of the other part-time dentists and Practice Manager.

The practice has a computerised patient record system and they use a six monthly recall system, where letters are sent to patients asking them to phone the practice to arrange a check-up appointment. Although the practice was not a vocational training practice (where dentists provide supervised experience to recent dental graduates in order to facilitate the transition into unsupervised competent practice in the NHS), there was a belief among the team that they

operate at this standard. The principal dentist also carries out a dental practice inspector role and was described by team members as being *"really up on all these bits and pieces"*. Team members reported that the practice has a low turnover of staff.

In general, team members described the team's function and relationships in positive terms. They consider themselves highly motivated and always aware of the jobs that need to be done. The principal dentist was described as saying *"the in-box is always full"* and members described the practice as well run, organised, compliant and family orientated.

Participants described their patient base as mostly local people who have been "*coming [to the practice] for years and years so they just continue".* One team member commented:

"The patients are really nice, they've been coming here, I mean they've probably all been coming for a long time, they're well used to us, we're well used to them… I don't know, I mean…very friendly, kinda…comfortable coming in I'd say." **Participant 1 (Dental Nurse)**

(2) Views and awareness of guidance

Team member's awareness of guidance varied. When asked about dental guidance produced by the Scottish Dental Clinical Effectiveness Programme (SDCEP) both dentists were able to list numerous guidance documents they were aware of and regularly referred to. Other team members initially reported being unaware of SDCEP guidance, however on prompting, showed an awareness. One team member advised they were currently reading the *'Sterilisation of Dental Instruments'* guidance as part of their CPD, and the other stated that they were aware of the '*Drug Prescribing'* guidance and the '*Practice Support Manual'*, however commented that they would never consider referring to them. Feedback from the dentists on SDCEP guidance was generally very positive with the following comments:

"Yeah the, the first one, the "Decontamination into Practice", oh it was, it was excellent and I used it to set up my, my practice LDU and to train the staff on

the use of the LDU, and, and just general decontamination issues" **Participant 3 (Dentist).**

"Probably, well the drug prescribing, and the, well the children's one, is probably the ones that I probably use most, to my personal point of view" **Participant 4 (Dentist).**

When asked about their awareness of guidance in general, and how they would become aware of any newly published guidance or recommendations, non-dentists reported that they would be advised by their principal dentist:

"I just probably get passed on what I need to know and, and that's it, because anything to do with like the running of the, the surgeries and things like that I don't, I don't deal with at all." **Participant 2 (Receptionist).**

"Well … [slight pause] … to be honest I would say it, I don't really see it coming in a lot, I just go with what kinda (the dentist) suggests, unless I mean unless I, I get something in the post or there's something in the post that's came that's kinda just for anybody to have a read through or whatever" **Participant 1 (Dental Nurse).**

In terms of awareness of other relevant guidance, SIGN guidelines, Childsmile recommendations and the British National Formulary (BNF) were all mentioned as documents that team members in this practice were aware of and referred to on occasion.

Generally, there was a positive appreciation of guidance in Archibald Dental Practice, however rather than a procedure they follow religiously, participants gave the impression of guidance being something they *"just dip in and take bits out that you think you agree with, or you think you can implement".* This suggests a prioritisation of guidance at the practice level, possibly based on whether they agree with it or think they can implement it without too much difficulty. There was also a sense that the principal dentist took the lead in identifying and implementing guidance and that the rest of the team passively receive it. Team members agreed that having guidance keeps them up to date and "*obviously just getting better".* It was suggested that guidance acts as confirmation that things are being done correctly but *"there's usually nothing terribly new about it".*

In terms of guidance format, all participants in Archibald Dental Practice reported that they would prefer a hard copy rather than an electronic version. In respect of non-dentists this was largely because they do not have access to the internet whilst at work. The dentists' rationale was time and ease of accessing relevant information, as well as due to the large amount of information they already receive electronically. It was commented that it is easier to remember to follow something that is at the chair side, where they can easily refer to it. One dentist went as far as saying that having guidance only available electronically would act as a barrier to implementing it. In terms of the quantity of guidance that currently exists, there were no strong views about any additional areas where guidance was required. One participant commented:

"It's probably just about right, I wouldn't like to see too much more because it must be costing a fortune, and I just wonder how much it is helping with the rest of the profession." **Participant 3 (Dentist).**

The same participant went on to comment, *"Oh there is so much of it, you can't necessarily implement all of it…"* again suggesting that dental team members have to undertake some kind of prioritisation or cherry picking of information. The origin of the guidance did not appear as a high priority to team members in this practice. Furthermore, there was also no sense from participants that they would be keen to be involved in the guidance development process.

(3) Organisational barriers and facilitators to the translation of guidance

The main barrier to emerge to the translation of guidance in Archibald Dental Practice was communication. There was a strong sense that some team members were not up to speed with practice policies and guidance and are reliant on being told what they need to know.

Participants reported that although they had previously held regular team meetings and reported good intentions of doing so, this had recently fallen by the wayside. Reasons given for not having practice meetings focus on the challenges of getting the full team together in one place, at one time. It was noted that some team members work part-time; some work sessions in other

practices, and others have personal commitments that impact upon their ability to attend meetings outside their normal work hours:

"We did have staff meetings on a regular basis, just up until a year ago, but one of my associates was off on maternity leave and things got a bit chaotic from then, and trying to get people to stay behind and things…we've been having quite a tough year so we've not actually had a practice meeting per se, as such…" **Participant 3 (Dentist).**

"I think just the financial pressures of getting everyone together and particularly, when we have so many part-time working people, It's very difficult to ask someone if you're having a training session, on a Tuesday for instance, and the Friday girl does something else on a Tuesday, she's not keen to not do what's she's doing on a Tuesday…so it's very, very difficult to get them together." **Participant 3 (Dentist).**

The effects of not having any 'whole team' communication were clear and reinforced by participants reporting that *"mixed messages"* often occur due to only some members being informed about a change with an expectation that the message would be passed on to others. Team members also reported frustration with a new member of the team not *"pulling their weight"* and a lack of confidence that the issue was being addressed by senior team members. One participant commented:

Mr Archibald would mention something to the receptionist and just assume that the receptionist was going to pass the message on…maybe that wouldn't really happen and maybe vice versa, the nurse could maybe say to Mr Archibald and kinda expect him to discuss it with everyone else and it wouldn't really happen…we could probably improve on communication." **Participant 1 (Dental Nurse).**

The practice, nonetheless, appears to be a close team, with individual team member's personal problems impacting upon the team as a whole. It was reported that one team member had recently been on maternity leave and also has a partner in poor health. This was provided as one of the main reasons why it was proving to be so challenging to get the whole team together. Consequently, participants described the practice as having experienced a really difficult year as a result of this:

"…so we've had a difficult year, and she's still not fully back, and her husband doesn't keep well and things so, we've been having quite a tough year… so we've not actually had a practice meeting per se…" **Participant 3 (Dentist).**

The principal dentist is unanimously identified as the 'leader' within the team. He takes responsibility for all aspects of training and reports being extremely supportive of team members undertaking training, allocating a session per week for each dental nurse as protected learning time. He also provides training himself and ensures that everything is recorded in training log books. However, he reports facing the same barriers when organising team training sessions as he does getting the whole team together for practice meetings. Non dentists within the team were less positive about their ability to undertake relevant training suggesting that finding the time is challenging:

"If we were going on a course it would be out with surgery hours and just like if they had a free, cancellations, a free 10 minutes or whatever we'd do the CPD." **Participant 1 (Dental Nurse).**

One team member reported that she was unaware of relevant training and another stated that she did not need to undertake training:

"No, me myself personally, I don't, because I think under guidelines and things I don't need to do any of the training, it's really just the nurses that need to keep up to date…I know they all like get set aside time just when there's a spare nurse and things 'cause they will get time to do, obviously keep their CPD up to date and things. They do get that time, but me myself, no." **Participant 2 (Receptionist).**

Another barrier to emerge in relation to the translation of guidance was that concerning decision making within the practice. There was a strong sense of a hierarchy within the practice with participants regularly referring to 'Mr. and Mrs. Archibald' as being the ones 'in charge'. Together they seemed to take responsibility for the vast majority of decision making. In relation to decisions in connection with following clinical guidance, Mr. Archibald described giving the other dentists within the practice their own 'clinical freedom'; however, despite this comment he would appear to decide what is important and what should be implemented:

"……if it's a recommendation that is, something that's part of legislation or I deem it to be essential then, no, it has to be done…" **Participant 3 (Dentist).**

During the interviews participants regularly referred to 'doing as they were told' and 'following the rules' and this was a regular theme to emerge from the interviews with those interviewed in this practice. Decisions appeared to be made at the dentist level with very limited involvement from other team members. When discussing introducing a decontamination area within the practice, one participant commented:

I didn't really take any part in getting it set up, I wouldn't say, I think Mr. Archibald done all that but I mean we followed the rules as of like the clean, sorry dirty to clean contra flow and that kind of thing…" **Participant 1 (Dental Nurse).**

When describing what happens when new guidance is received by the practice the principal dentist reported that he would determine whether it was relevant for other team members to become aware of it, saying:

"if it was felt it was relevant to anyone other than the dentist, and training was involved, the individuals would be, or the dental nurses would be, shown what was relevant and what was changed…" **Participant 3 (Dentist).**

His wife supported this description of the team dynamic commenting:

"My husband's the leader, I'm the gofer, I'm the typer when it comes to practice policies and things like that, but he's the leader…it's a joint effort, again my husband is normally the brains and I'm the sounding board and the typer..." **Participant 4 (Dentist).**

The final area identified by participants as being a barrier to the translation of guidance was in connection with resources, in particular time and finance. It was reported that time pressures were regularly faced in trying to meet patients' expectations for appointments, particularly unscheduled or emergency appointments. Time also appeared to influence the amount of training team members were able to participate in as well as the time available for the practice to undertake audit. Participants reported that in general, it is hard to find the time to communicate with each other in the way they would choose to:

"I mean you are under pressure if someone phones up and they've got an emergency, they really want to be seen there and then, you try as much as possible just to accommodate them and keep them happy…" **Participant 2 (Receptionist).**

"…there's just not enough time, half an hour for lunch and, you know extra people coming it so it's, more time would be the, my initial answer to that. Well it goes back to the time issues, and the, being a, you know an NHS Practitioner……" **Participant 3 (Dentist).**

The financial restrictions associated with team members undertaking training were also highlighted during the interviews, and in particular if the practice was to be closed for whole team training. Participants also raised the issue of potentially changing to text messaging patients with appointment reminders, rather than sending letters or postcards, due to the cost of stamps rather than the administration involved.

The principal dentist illustrated the financial pressures he faces and also expressed his views on the wages available for the rest of the team as follows:

"It's really very much I feel at my feet, I think just the financial pressures of getting everyone together and particularly when we have so many part time people working, it's very difficult…considering what they get paid, through the health service and myself, you know the fees are appalling just now and as a result nurses' wages aren't great, I think they work very hard for what they do." **Participant 3 (Dentist).**

Despite these challenges, there were aspects of the leadership within Archibald Dental Practice, which appeared to facilitate the translation of guidance. The principal dentist was described as being very approachable and, despite the lack of formal team meetings, the ability to have informal and ad hoc discussions seemed crucial in keeping the flow of communication going as expressed in these views:

"I mean if we weren't having a practice meeting and I thought there was something that should be discussed then I would just go directly to him." **Participant 1 (Dental Nurse).**

"We don't have a briefing that often, just me myself in particular, if I come in, in the morning Mr. Archibald will speak to me and if you've got a few things that

need done, we just go through them all, and I'll just get on with what I've got to do and get it done, and I think it's the same for all the girls." **Participant 2 (Receptionist).**

"I think it's just like general discussions between ourselves and the dentists, that just like keep the communication going and everything running smoothly." **Participant 2 (Receptionist).**

It is clear that the principal dentist leads by example and has distilled a good work ethic among team members, with one participant commenting:

"Well I think we are all pretty motivated, we, just we know the job needs done, there's always, I mean as Mr. Archibald would say, "the box is always full", so there is always something to be done, and I think we all kinda, we get that, that idea, we're always looking for something to do really..." **Participant 1 (Dental Nurse).**

Despite the lack of involvement in decision-making, team members appeared happy to *'follow the rules'* set by the principal dentist and this appeared to work in terms of implementing practice policies and guidance. As mentioned, the principal dentist reported prioritising training, through the allocation of a half day a week of protected learning time for the dental nurses and by providing training to team members himself. Despite the challenges he raised about undertaking team training, team members reported having undertaken team based training in decontamination, first aid, digital radiographs and on a new computer system within the last year. Participants commented that they felt having in-house training for the whole team was really beneficial. When asked what helps them implement new guidance, one dentist commented:

"In practice training from outside bodies, we also use the same with resuscitation and practice emergencies we have someone who come in annually and that's very useful too because it's done in your own setting, so people, you know in practice training I think it's very useful." **Participant 3 (Dentist).**

Having links with external organisations also seemed to act as a facilitator. The principal dentist is a dental inspector for the local health board, and reported that having this enhanced knowledge as well as links with the health board, is helpful in terms of keeping the practice up-to-date with current policies. Team

members also reported the benefits of the Childsmile initiative, a national programme in Scotland to improve the oral health of children, in terms of having direct benefits to patients.

The final factor to emerge as facilitating the translation of guidance in Archibald Dental Practice, through improved communication and team motivation, was having clear roles for team members in some areas, but also having a rotation system between surgeries and shared responsibility for working in the LDU. Nurses are regularly rotated between surgeries and hence spend time working with different dentists. This appeared to facilitate communication. As part of this system, it was reported that there would be a spare nurse who takes responsibility for the running of the LDU, meaning all nurses are trained in this area, have experience working in this area, and as a result, their daily tasks are not always the same, keeping interest and motivation at a higher level.

"Each dental nurse is responsible for the surgery that they are working in, and for closing down the surgery at night, but when we have a spare nurse, which is most days, the spare nurse is responsible for sterlisation and they're on the LDU, so I mean it's fairly clear, but it rotates so they don't get fed up." **Participant 3 (Dentist).**

Black's Dental Practice

(1) Practice characteristics

Blacks Dental Practice undertakes 95% NHS treatment and specialises in orthodontic treatment. Patients are mainly children, although in recent years' team members report an increase in adult patients as a result of an increased awareness in cosmetic dental procedures. The practice team is made up of four dentists, one full time and three working four days a week. There are five qualified dental nurses, although one of the dental nurses predominately carries out dental surgery assistant tasks, such as covering reception and carrying out administrative tasks. There is also an administrator who works one day per week assisting the practice manger, who is the current practice owner's wife.

The practice has a computerised patient record system (Software of Excellence) and use a telephone and letter reminder system to keep in touch with their patients. The practice has recently set up a website and Facebook page to interact with patients but acknowledge that they need to do more work to maintain these. They do not currently 'officially' use text messaging to remind patients of appointments but there is motivation among team members to take this forward, with one team member commenting:

"I have personally used my own phone though, we don't have like a practice mobile or anything but I, if I had somebody's that's em, like maybe in the middle of treatment and we haven't seen them for a while I have sort of like tried to chase them up with texts and things, em which did actually work em, but I don't know if they're wanting to look into that in the future or not but I think it would be a good idea if they did actually." **Participant 7 (Administrative Assistant).**

The practice is described by team members as having a low staff turnover with all team members having been in post for a minimum of five years. Team members appear to view the practice in mixed terms. They describe it as a friendly practice, made up of a close knit team, who generally work well together. However, there was also a view that that the practice was lacking in development, was not particularly forward thinking and was *"more reactive than proactive."* Team members report the practice to be short staffed as evidenced by a dental nurse covering the reception area. There was also a suggestion that some team members were not particularly motivated. One team member summed up the practice by saying:

"We just kinda tick over I think, you know we, it's been here a long time the practice, it's been here since the 70s so, it's well established…" **Participant 5 (Dentist).**

Despite this, there were indications of forthcoming practice improvements with a move towards using new innovations such as Facebook and a practice website to keep in contact with patients. Team members also discussed plans for the associate dentists to buy into the practice to create a new partnership. There was a real sense of optimism concerning this:

…we are planning to totally revamp once we are involved in this new partnership so we're looking at the BDA, the BDA kind of good practice which we're going to use as the basis of transforming the practice, that's our plan." **Participant 5 (Dentist).**

(2) Views and awareness of guidance

All members of Black's Dental Practice were very aware of guidance, in general, and of SDCEP guidance in particular. All team members were able to list numerous guidance documents they were aware of, and although some guidance documents were considered less relevant, given the practice specialises in orthodontic treatment, topics such as decontamination, sterilisation of instruments, dental caries and drug prescribing were all mentioned. One dentist referred to recently receiving the SDCEP *'Sterilisation of Instruments'* guidance document and having *"a great plan of going through it with my nurse and finding out, you know, where we do fit into this…."* Other guidance documents also mentioned included the British Orthodontic Society guidance packages, guidance on radiographs and general health and safety and first aid guidance.

When asked how they become aware of new guidance, it was reported that guidance is generally received individually by the dentists, through the mail, and they chose how to deal with it individually. No clear system for disseminating new guidance to the rest of the team appeared to be present:

"Maybe em if anything comes in and if, if we're not told, if it's lying about then we kinda say, say well "when's this coming in?" you know," when was he going to tell us about this?" or blah, blah, but we don't actually, be given out anything basically…" **Participant 6 (Dental Surgery Assistant).**

In terms of the guidance format, all participants in Black's Dental Practice reported that they would prefer a hard copy to an electronic version. Although electronic versions were considered useful in some circumstances, for example when working in the surgery, hard copies were considered easier to access, given time, restricted internet access and team members' confidence when it comes to accessing online information. It was suggested that for some

guidance documents, accompanying videos may be useful to provide practical examples, which could (then) be shared with the whole dental team.

Views varied about the origin of guidance and how this might impact on its credibility. One dentist expressed the view that who had sent the guidance was more important than who had actually developed it, commenting:

"…if I'm getting guidance from the BOS or if I'm getting it from the health board then I'm thinking these people are obviously sending this to me, they're getting it, they're passing it on and so I would assume, and I, I wouldn't challenge, and I probably wouldn't analyse, who had done the studies and sort of, I wouldn't necessarily go into depth, I would just assume that if it had come from a reliable source then it would be valuable". **Participant 5 (Dentist).**

Team members suggested that they would like to be more involved in the development of guidance and generally felt that it was important to be kept updated. There was frustration from the non-dentists that dissemination within the team was lacking:

"…to be honest I would like to be more up on these sort o' things as well, so if there's anybody else who's got questions you know I'll, I would maybe be able to help them as well". **Participant 7 (Office Administrator).**

(3) Organisational barriers and facilitators to the translation of guidance

Team members identified a number of barriers that exist in relation to implementing guidance in their practice. The majority of these barriers stemmed from the current practice structure and leadership. The practice is on the verge of restructuring, with two associate dentists buying in to create a partnership. Currently the practice is owned by one dentist (the principal dentist), who is considered the 'leader' amongst the dentists:

"It would have to be the practice owner at this point in time. I think that will change in the next couple of months. I think he will tend to take a back seat and, and more of the onus will be placed on myself and the other partner." **Participant 5 (Dentist).**

The principal dentist's wife currently undertakes a Practice Manager role. When asked who they identify as the leader within the practice, both non-dentists

reported that the Practice Manager provides leadership for them. In some ways this enforces the sense of a divide between the dentists and the non-dentists which emerged from the interviews. When asked about leadership within the practice, one participant commented:

"...the Practice Manager, I would say that the dentists as well, some to a lesser or greater extent than others, but yeah generally like they all sort of huddle together." **Participant 7 (Office Administrator).**

Team members identified that poor communication acts as a barrier to the translation of guidance in the practice. It was noted that *"communication could be better and the communication between the orthodontist and nurses is poor."* Participants reported no formal communication mechanisms, such as practice meetings, performance reviews or opportunities for general discussion in relation to the development of the practice, unless there was a serious issue which required discussion:

*"…sadly the only time there is a meeting of the whole team would be when there is a major issue or it's becoming a major problem, and then it could be quite confrontational. That would trigger a full meeting based on whatever the issue was and it would be brought up fait accompli, 'look, this is what's happening, we don't want this, we want this, no questions asked, this is what's happening, we start tomorrow', boom! "***Participant 5 (Dentist).**

"We don't have monthly meetings or gatherings or anything like that. We don't really know what's going on half the time, don't get me wrong, we socialise outside, but we don't have meetings every month…the only thing that we do is short and sharp and just do it differently and that's it." **Participant 6 (Dental Surgery Assistant).**

In terms of the dissemination of guidance and recommendations, it was reported that the dentists generally receive guidance individually, and there is limited discussion or dissemination to the rest of the team. It was noted that on the whole guidance is *"passively received"* rather than being actively sought out:

"…in my experience so far here, everyone individually gets them, everyone individually reads them, and there is no sort of coming together to discuss them or see how they would impact on us…" **Participant 5 (Dentist).**

Non-dentists reported feeling frustrated about not being aware of new guidance and feeling uninformed about what changes are being planned as conveyed in the following comments:

"We don't really get access to them, we're only told what they contain, what to carry out, but we don't actually have it in front of us to get, you know have the opportunity to look through it." **Participant 6 (Dental Surgery Assistant).**

"I shouldn't be saying this but, we're not really informed 'as a team'. One or two people are passing you things and then it gets passed on rather than have us all together…I could be here, maybe two of the other girls could be here, we could be told and then maybe the part-timer would come in on Thursday and she wouldn't know anything about it, unless we remember to tell her, so it's basically lack of communication all the time." **Participant 6 (Dental Surgery Assistant).**

As well as this lack of communication, team members reported no mechanisms to allow them to contribute towards practice discussions and decision making and described the practice as a hierarchy commenting that it is *"an old established practice, almost archaic in its sort of admin system"*

"I think as a team our whole concept of communication and relaying of information could be better, but I think that works both ways, both from the team leaders down and also from the people at the bottom up, 'cause often people you are working, I say at the bottom, I'm using that as a hierarchical system but the people who are at the frontline often have things to say but rather than being given a forum for venting that or sharing that, you often hear it in terms of Chinese whispers and moans and groans…" **Participant 5 (Dentist).**

"…there's no real discussion between everyone as a team, about what sorts of things would be useful, you know nobody really has any input at all." **Participant 7 (Office Administrator).**

Limited access to training, and a lack of personal development and performance feedback also emerged from the interviews, particularly among the non-dentists. It was reported that there were no systems in place to facilitate such training and feedback, and there was also no-one within the practice taking responsibility for taking this forward. Reasons provided for this, focussed on the practice being short staffed and a lack of available financial support. When asked about training one participant commented:

"*Well no, eh in a word no. We don't have enough staff to be allowed to go to things, if we want to do ours we've basically got to pay for it ourselves and do it in our own time, or do it online or…we used to em, maybe up until about two years ago we, we were able to go to courses and things, but it's all changes now, we're just, they just say that they don't have the staff and the time to let us go, so…we're not really learning any new skills at all, I don't think."* **Participant 6 (Dental Surgery Assistant).**

Staff shortages were highlighted by participants, with all team members having to cover reception due to the lack of a full time receptionist. Linked to this was a sense that team members do not have clear roles and responsibilities. In order to address this, a dental nurse had been placed on reception duties three days a week; this, however, has the potential of de-skilling a clinically trained member of the team. These factors as well as the lack of opportunity for staff development may be contributing towards low morale within the team. Participants reported that team members lack motivation and enthusiasm at times and described the practice as not being *"forward thinking".*

"*…to be honest it's just a case of you work in the surgery, that's your job, but there's not any clear guidelines about who's doing what, like in terms of like even maybe helping out at reception if we are short staffed or anything like that…and that can cause a wee bit of resentment."* **Participant 7 (Office Administrator).**

The office administrator who previously worked in the practice full time but left, and has now returned to help out one day per week, reinforced the frustration experienced due to lack of development opportunities:

"When I was working full-time that was one of my frustrations and why I did sort of leave to do something else and, they weren't really sort of keen to put you through any sort of training so that you could get a qualification because I would have been quite happy to do like, you know the National Certificate or something like that, but they weren't really, they're not really that keen, you know I think it's just sort of like, you know whatever they can do, it's basically just the, sort of the CPD, that the girls need to do so many hours, you know it's not really like they're wanting to, to further them, like their knowledge or anything like that and I do think that some of the girls find it quite frustrating as well that they, they would like to do more." **Participant 7 (Office Administrator).**

The main factors to emerge as facilitating the translation of guidance in this

practice centred on the proposed changes anticipated in the change of ownership. One dentist (Participant 5) reported plans to improve communication within the practice, and to introduce regular practice meetings and annual staff appraisals. Interestingly, he suggested there may be an initial resistance to the introduction of an appraisal system; however, other team members interviewed suggested that this was something they would welcome.

"I was used to sort of annual appraisals and the two-way flow of information, and all that sort of stuff that went along with that, so I haven't looked at the, the BDA sort of protocol for that but I imagine it'll be something similar to that so what I anticipate is that by the end of the year we will have a system in place where we have annual appraisals for all members of staff, which I'm sure they will object to initially but…" **Participant 5 (Dentist).**

Another change suggested as part of the practice re-structuring was to clarify team members' roles and responsibilities. This included having a dedicated member of staff covering reception duties. The role of the Practice Manager was also touched on briefly during the interviews. Some aspects of the current role were considered to work well with examples given concerning the dissemination of guidance to the dentists. However, other aspects were reported as being less effective, in particular, the ordering of materials. This perhaps reinforces the need for the restructuring and clarification of roles. One participant suggested that having one person within the practice, who is responsible for guidance dissemination, could be another way of facilitating its translation:

"Having the support of your managers or anything like that, and having them sort of making you more aware of it as well rather than having to, you don't know where to start looking for things like this as well, so definitely having someone's who's maybe that would be like part of their role to help to, be aware of all these things and make the team aware." **Participant 7 (Office Administrator).**

In general, despite the communication challenges, participants reported that they work well together as a team. Participants exerted a positive and enthusiastic attitude, striving towards best practice and motivated to make improvements. When discussing the implementation of new guidance, participants commented:

"We tend to be quite conscious that we want to try and do the right thing, you know within the sort of limitations we have, but so far there haven't really been any hurdles that we've not been able to overcome." **Participant 5 (Dentist).**

"…to be honest I would like to be more up on these sort o' things as well, so if there's anybody else who's got questions you know I'll, I would maybe be able to help them as well". **Participant 7 (Office Administrator).**

Despite comments about the practice being *"traditional*" and *"archaic"* in its nature, there was a sense that with the new ownership there would be a move towards more innovative methods of working. When asked if the practice had a website, Facebook or Twitter account for keeping in contact with patients, it was reported that one of the dentists intending to buy into the partnership is a *"young"* associate who is *"very keen on this type of methodology".*

In terms of how guidance is disseminated, participants advised that having regular up- dates about any changes would be welcomed. It was also suggested that providing training tools or packages with guidance documents, such as videos, may facilitate guidance translation. Finally, participants suggested that the development of guidance for patients may also facilitate implementation of guidance recommendations. This was primarily suggested in the context of patient's general health and providing advice about when poor general health may impact upon them attending at the dental surgery.

Campbell Dental

(1) Practice characteristics

Campbell Dental is a 'Denplan Excel' practice offering approximately 75% of their treatments privately through a Denplan insurance scheme. The dental team is currently made up of two full time dentists, one of which is the practice owner, and a third dentist who was shortly to join the team, and who would only undertake private treatment. There are four dental nurses, two hygienists, one full time, and one part-time receptionist and a Practice Manager. Team members described the practice as having a low staff turnover with all members in post for at least seven years.

The practice has a computerised patient record system (R4) and use a text message reminder system for patients. Most appointments are made in the practice so there are very few phone calls or letters to patients required. In addition to text messaging, the practice has a website, a Facebook page and a Twitter account to keep patients informed. Not all team members were completely convinced about the benefits of using such innovations, but could see the longer term rationale for their use:

"I wouldn't be eh, I wouldn't be looking at eh particularly spending a lot of time on it but I am aware that as a business you should have, you should at least have, you know that it, it, have your patients know that you are on it and that… I think for our particular clientele of patient I don't think they, they are the type that will be "Facebooking" and "Twittering", however that's narrow-minded and that, you know for our future patients they probably will be so, em you've got to sort of be up there, so we have got, on our Website we've got links and occasionally I put on a little bit, but it is not a daily thing, I know some dentists spend their life on Twitter … I don't know how they can afford the time, but…" **Participant 8 (Practice Manager).**

The practice is not a vocational training one but team members consider themselves to be working at a very high standard. One team member commented:

"I suppose for us we're a Dental Excel practice we use all the Denplan support, and we don't have a high NHS input from patients, you know so we tend to go to Denplan and Denplan tend to always that, just that little bit higher than, than we would have, we never have a problem having inspections for example…" **Participant 8 (Practice Manager).**

Team members described the nature of the practice in very positive terms. They reported the practice to be fairly old fashioned in terms of its leadership with a dentist led, hierarchical system in place. Participants regarded themselves as motivated, up-to-date, committed, independent, caring and interested in their jobs, in their patients and in dentistry in general. One team member commented:

"I would say it's a very happy practice. I think we're, we, we like to do advanced dentistry. We enjoy treating our patients and it's a family practice, people come in here and they know us very well, they've been coming for a long time, so it's a really friendly happy place to work actually, and it's good that, you know we all

want to keep up-to-date, we do our job to the best of our abilities, and em … I, I think the patients really appreciate that as well." **Participant 10 (Dentist).**

Team members from Campbell Dental described their patients as being quite affluent with the practice being located in a high socio-economic area. Patients were reported as being slightly skewed towards the elderly and retired populations.

(2) Views and awareness of guidance

The dentist and Practice Manager interviewed from Campbell Dental were very aware of SDCEP guidance and, in particular, highlighted referring to SDCEP's Decontamination guidance. The dentist was extremely positive about these guidance documents branding them *"fantastic"* and *"very helpful".* The dental nurse, however, was not aware of them. Nonetheless, overall the practice seemed very aware of guidance from a wide range of sources and in varying forms. As a Denplan practice, they reported referring to a significant quantity of Denplan guidance as well as monthly up-date magazines. There was a sense that the practice considers themselves to be very up-to-date with guidance and when referring to the team, the Practice Manager commented:

"I think they are quite motivated. I think they are very up-to-date with what's out; you know what's new in dentistry." **Participant 8 (Practice Manager).**

Participants also reported receiving guidance from their local health board, monthly publications from dental magazines, as well as participating in 'lunch and learn' sessions, where representatives from dental companies come in, bring lunch, and talk to the team about what is new in the industry. There was an awareness of the growing forms in which guidance is now available, with one team member making reference to a British Health Foundation 'app', and another mentioning a dental trauma guide 'app', highlighting the important role of new technologies in the translation of guidance:

"It's, it's really brilliant, that is probably the best format, because what I've done is, so I've put it on Favourites and so you go onto that, if somebody comes in with a broken tooth, you can go straight onto the Dental Trauma Guide, and you've got a-l-l the, the care pathways, it's just fantastic and you don't even

need to fanny around getting the stuff up on the, on the computer you just click straight onto it, it's great." **Participant 10 (Dentist).**

When asked about how they would become aware of new guidance, team members reported that it was either mailed as a hard copy to the dentists or the Practice Manager may receive information by means of email. It was clear from speaking to team members that they have clear systems in place and that the Practice Manager takes responsibility for disseminating information within the practice:

"I obviously give it to them to read and then I would say, if it's something that's important for the rest of the practice, then at our Staff Meeting then I would say "this has come in and to be aware of it", or I'd put it on a Notice board in the Staff Room for people to read" **Participant 8 (Practice Manager).**

"Normally it would end up on the Practice Manager's desk, and then it comes down to me, and I'll read through it, so it goes into a wee pile of things that I've got to read through and I do read through them, I am quite good at doing that [laughs] … I'm not allowed to have a pile of papers for very long in the surgery" **Participant 10 (Dentist).**

Generally, there was a positive appreciation of guidance and one dentist, in particular, came across as very enthusiastic and motivated towards the use of it saying:

"I think it does improve things, because it keeps us thinking about what we should be doing for our patients, so what, what's the right way of doing it, and if we're all doing the same thing, we're all singing from the same hymn sheet then obviously I think probably the patients get a much better quality of care…but of course they're always moving the goalposts, so it's all very exciting!" **Participant 10 (Dentist).**

There was some concern raised, that "*we have far too many people telling us what to do"* and the quantity of guidance there is, and the regularity in which it changes, is not a good thing for the dental profession:

"You're potentially building an environment whereby you've got dentists who are not particularly good dentists, but very good at ticking all the boxes, you know which is not what it's about." **Participant 8 (Practice Manager).**

The origin of the guidance was considered important to team members in this

practice. It was considered crucial that there be a good cross-section of people able to advise on the logistics of implementing the guidance in a practical dental setting, those with a range of dental backgrounds, and that it is important to demonstrate that the guidance has been well researched.

Team members from Campbell Dental interviewed gave the impression that whilst they would always ensure their legal obligations were met, and believed they were *"ahead of the game"*, there are times when they prioritise which recommendations to follow, using the mantra *"common sense has to prevail"*. An example of this concerned the frequency of having their Washer Disinfector serviced. Manufacturer's instructions suggest servicing should be every three months, but given the expense attached to this, the practice had elected not to follow this recommendation. Another example was in connection with the setting up of a Local Decontamination Unit (LDU) in the practice. Initial guidance suggested that two rooms would be the ideal, a dirty room and a clean room, but one participant commented:

"…it was just … it was an, it was for an idealistic purpose built practice, and there, there will be thousands of practices out there who would have had to close if that, those, those guidelines were brought into fruition, you know so no, that, that, I suppose in that way we, we only had one room and that was just how, we had to make the most of it and make it to, you know to the best of our ability and I believe it actually works perfectly well." **Participant 8 (Practice Manager).**

In terms of guidance format, views varied from having it available in both hard and electronic formats to providing them online or in "app form".

(3) Organisational barriers and facilitators to the translation of guidance

As highlighted, members of Campbell Dental were generally very positive about guidance. They did, however, identify some barriers that exist in relation to translating guidance in their practice. One barrier appeared in the context of expectations. This was in terms of patient expectations as well as what were considered to be unrealistic expectations of those developing the guidance. Participants reported that their patients have very high expectations, possibly due the practice being in an affluent area, with the majority of their patients

paying for private treatment. It was noted that patients can be very demanding of the high standard of treatment they expect, and that they anticipate being able to make appointments at short notice as evidenced in the following:

"…they can be very demanding, but I mean we meet most of the demand, I wouldn't say that we don't, no, but they do expect quite a high level of care" **Participant 9 (Dental Nurse).**

"Well you may get someone's that's maybe a private patient that's maybe not been in for a while, he maybe has outstanding treatments, but then they want it done there and then, you know, because he's now having discomfort from it…" **Participant 9 (Dental Nurse).**

Team members also reported that in some cases they find guidance recommendations unrealistic and challenging to implement. In particular, the servicing requirements for washer/disinfectors were highlighted as being hard to achieve as was the testing of autoclaves. This was mainly due to the cost implications.

"The health board would sometimes come in and say 'we want everybody to have these kind of machines, and we want them to be serviced every 3 months', and you know, sometimes they've got unrealistic expectations, so economically you would know that, that is just not what you would do and these washer/disinfectors, they, they test run, they tell you if there is a fault and they just don't need serviced every 3 months" **Participant 8 (Practice Manager).**

It was also mentioned that in addition to being unrealistic there is often a lack of clarity regarding how to meet these expectations. Examples cited were in connection with the setting up of a local decontamination unit, following decontamination guidance, and being unable to get clear recommendations and advice on the best equipment to purchase. Significantly, this lack of clarity initially impacted upon the practice's ability to follow the guidance, despite their best efforts and intentions.

"…actually trying to equip the room with the proper equipment was really tricky because nobody would, would decide exactly what was going to be the best form of equipment, and so actually I was on with (a decontamination advisor), I was speaking to absolutely everybody about what kind of washer/disinfector would be suitable, and nobody would tie down, nobody would say 'yeah that's going to be ok'" **Participant 8 (Practice Manager).**

Related to this lack of clarity was a sense that the guidance constantly changes and recommendations made one day, may change the next, leaving the practice uncompliant.

Whilst members of Campbell Dental appeared to have good intentions of following guidance recommendations, they identified that external organisations could influence their ability to do so. One example was in relation to a steriliser which had been purchased from a company in the South of England. Although the machine could have been fixed by a local company, the servicing contract stipulated that it had to be fixed by the supplier, causing an unnecessary and additional delay. Another example, referred to when the practice was undergoing an extension to accommodate the local decontamination unit. Team members reported that the local council was unhelpful and created additional hurdles for them. Finally, participants also highlighted challenges in relation to internet referrals. It was reported that the practice's computer software was too advanced to be compatible with the NHS referral system. Current guidance stipulates that all referrals should be recorded online, which Campbell Dental Practice are unable to do, hence creating a barrier with regard to following the NHS guidelines.

Communication from the principal dentist was another area highlighted as having room for improvement. Team members reported that the practice is 'old fashioned' in some respects with the principal dentist considered the leader. This was not necessarily intended to have negative connotations, but there was an acknowledgement that in some situations there could be greater involvement from the whole team:

"It's an old fashioned practice, so we've got Mr Campbell who's the practice principal, he is the leader of the practice" **Participant 10 (Dentist).**

"Well in dentistry the dentist is always the boss, they have a very strong opinion and nobody can overrule them if they're wrong…so I think it would be better if the nurses were able to express their opinion…about some things." **Participant 10 (Dentist).**

"…you know he communicates to me, but sometimes it would be better coming from the dentist to his nurse for example, maybe not through me" **Participant 8 (Practice Manager).**

" …the only thing is Mr Campbell will maybe go on a course or something and then he'll decide he's going to be using something new and then the last one he tells is his nurse…" **Participant 9 (Dental Nurse).**

It was also reported that although Mr. Campbell is viewed as the practice leader, he will often only get involved in team discussions at the end, if a final decision needs to be made, perhaps not fully participating in all team communication and discussion. This was reinforced by the fact that when the practice had in-house decontamination training for the 'whole team', it was undertaken when the principal dentist was on holiday. Mr. Campbell was also unwilling to participate in these interviews, and the following remark was quite revealing:

"Mr Campbell was away, I was in, we shut my book and…the rest of us sat in a room and we had a really good interactive meeting, it was very, very helpful." **Participant 10 (Dentist).**

The practice size and premises were also highlighted as barriers to the translation of guidance. One participant commented that being a smaller practice, comparison with larger corporate practices, was not in their favour. It was felt that larger practices have greater resources, the ability to move staff around more freely and the option to purchase equipment in bulk. Space was also highlighted in terms of storage and the fact that the team operates between two floors of a building:

"It's quite a small practice, there's not a lot of extra space nowadays, such as space for storage of things like models and stuff so that would be a barrier." **Participant 10 (Dentist).**

Financial resources were also mentioned as a barrier. This was mainly in terms of the servicing and testing of equipment. It was noted that decisions are often made due to financial constraints which may impact upon best practice being implemented. In some ways it could be argued, as articulated by the comment

below, that since guidance recommendations are only 'guidance' and not legal requirements this may act as a barrier to compliance in itself:

"I think financial issues, I mean we were talking yesterday about cross infection and sterilisation and whether to use certain test factors to see if things have actually been sterilised, you know the little test dockets that you put through in the autoclave, but there is also a bigger one I think, which costs £25 a pop and we're supposed to be using that every week…and even though its gold standard it's not actually legally binding, you don't HAVE to do that, I think we realise that you know within reason we can't afford to do that in this climate nowadays." **Participant 10 (Dentist).**

The key facilitator to the translation of guidance in Campbell Dental was strong leadership. All team members identified the principal dentist as being the 'leader' and described him as *"very motivated"* and someone who *"leads from the front".* However, it was the leadership provided by the Practice Manager, which emerged from the interviews as being most influential in relation to the translation of guidance, with team members identifying her as the pivotal point of contact within the practice, and claiming that:

"Camille's always there, if we've got an issue and then you know we can talk about it and everyone gets involved." **Participant 10 (Dentist).**

"I think everyone's aware if there's a change or, or we do make each other aware and then somebody will then have to work with it and, Camille is normally involved in that side, she'll know what our legal obligation are and then she'll discuss with the team how we would change things." **Participant 10 (Dentist).**

In fact, the Practice Manager reported numerous processes and systems within the practice which she takes responsibility for, one of which involves the implementation of new guidance. As can be seen from her comments below, she takes the lead in this area, ensuring guidance is disseminated within the practice, either by putting it on the staff notice board and asking team members to initial it to show they have read it, or by bringing it to the teams' attention at their monthly team meetings:

If it's from our health board, they (the dentists) both get a copy and then, so they, I obviously give it to them to read and then I would say, if it's something that's important for the rest of the practice, then at our staff meeting then I

would say "this has come in and to be aware of it", or I'd put it on the notice board in the staff room for people to read." **Participant 8 (Practice Manager).**

"At the staff meeting, everything's minuted and jobs are allocated to whoever is going to do it, I then give everybody a copy of the minutes and it's up to the person to action the point and I make sure they've been actioned." **Participant 8 (Practice Manager).**

"We've got a book downstairs that we use to bring up issues for staff meetings…so if it was something that one of the dentists wanted to bring up then they would have noted that down…I mean I open all the mail so from that point of view, I suppose it's up to me to pass it around". **Participant 8 (Practice Manager).**

From the interviews, a real sense of reliance upon the Practice Manager emerged in terms of keeping the team updated on new guidance and recommendations:

Well normally if there is an update to what we're doing already…we have procedural instructions on the walls, so if there's any change to that it would obviously come down and another one would go up with the inclusions in it." **Participant 9 (Dental Nurse).**

"Normally it would end up on the Practice Manager's desk and then it comes down to me and I'll read through it, so it goes into a wee pile of things I've got to read through and I do read through them, I am quite good at doing that…I'm not allowed to have a pile of papers for very long in the surgery." **Participant 10 (Dentist).**

There was also a sense that the practice as a whole was very proactive at keeping abreast of changes to guidance and keeping up to date with changes in dentistry in general. Team members reported undertaking a significant amount of training, both individually and as a team, and this appeared to be actively supported and encouraged by the principal dentist, despite, as previously mentioned, often the 'whole team' training takes place without him. The practice subscribes to all the major dental magazines and they encourage the representatives to come for 'lunch and learns' as previously described. When discussing who undertakes training, it was noted that everyone gets involved with no discrimination between different roles. One team member commented:

"The whole team, no, we do a lot of training and, we get encouragement from the bosses and Camille, you know if there's any course work that's coming in that they think we're short on, they'll give it to us so that we're not missing out on anything, you know…Its good for them to get an idea of what we're actually doing, so that if anybody comes to enquire, you know, they've got a good, they're putting it over to them, you know if there is any enquiry." **Participant 9 (Dental Nurse)**

It was also clear that all team members have their own roles and responsibilities in Campbell Dental:

"Everybody in their own domain, has their own responsibilities so you know, I think down, from the top to the bottom, everybody is, you know is given responsibility…" **Participant 8 (Practice Manager).**

Linked to clarity of roles and responsibilities, good methods of communication also emerged as a key facilitator within Campbell Dental, with team members describing having staff appraisal and development systems in place as well as regular whole team meetings, despite the challenge of getting everyone together. They reported regarding these meetings as highly influential in driving forward changes in the practice. Team members attributed how they work together to being a reasonably small practice, where all members have worked together for a long time, are approachable and respect each other.

The attitude of team members also emerged as shaping the culture of this practice. Team members described their colleagues as motivated and dedicated and generally seeming to enjoy their work claiming:

"…they are all very motivated, they are all very caring, they are all very committed to their job, they're very interested in dentistry, actually interested in their work I would say..." **Participant 8 (Practice Manager).**

"I would say it's a very happy practice. I think we like to do advanced dentistry. We enjoy treating our patients and it's a family practice, people come in her and they know us very well, they've been coming for a long time, so it's a really friendly happy place to work actually and it's good that, you know we all want to keep up to date, we do our job to the best of our abilities and I think the patients really appreciate that as well." **Participant 10 (Dentist).**

Team members reported the practice to be 'advanced' and this was evidenced by their awareness and use of new technologies. This included having practice website, Facebook and Twitter accounts, using text messages to remind patients about appointments, using mobile phone applications such as the R4 computer system, which can be accessed on iPhones and iPads as well as using R4 instant messaging as a method of communicating between surgeries in order to address the challenges of surgeries on different floors of the practice premises. Team members indicated that although they may not personally be believers in using such mechanisms, they acknowledged their importance in terms of developing the dental practice and keeping up with patient demands.

Campbell Dental also evidenced their positive attitude to making changes and improvements with a number of examples of recent changes they had implemented. These included, the use of new smoking cessation guidance through which they have seen good results, the introduction of a senior implant nurse and co-ordinator, the use of audits and patient questionnaires and feeding these results back into their everyday practice in order to improve patient care as well as the introduction of a Childsmile nurse. Team members reported that although the high expectations of their patients, can at times act as a barrier, this also encourages the practice to continually improve:

"I think where we are we've got very educated patients who are well aware of what's out there and would not tolerate anything other than the best." **Participant 8 (Practice Manager).**

"I think that patients definitely expect us to keep up to date and follow the rules and be ahead of the game…we mainly treat children on the NHS and I'm sure that all of the parents in this area expect us to be providing Childsmile and the fluoride and the fissure sealants." **Participant 10 (Dentist).**

In addition to patients, team members suggested that other external organisations facilitate their ability to implement guidance, for example, the co-operation of other NHS bodies such as the local oral surgery department and orthodontic practice. Finally, team members commented that having guidance that is straightforward, accessible and easy to understand by all, helps them put it into practice:

"I mean you want it to be accessible, something that is easy to, easily understood at all levels, not just for the dentist to understand, or, you know it's got to be something that everybody can understand." **Participant 8 (Practice Manager).**

Davidson's Dental Care

(1) Practice characteristics

Davidson's Dental Care is a fully NHS dental practice. The team is made up of six dentists, one full time and five, part-time, and six dental nurses, one of whom also undertakes some practice management responsibilities. There is one receptionist and a part-time hygienist. The principal dentist has owned the practice for 8 years, having worked as an associate dentist in the same practice. The practice has a paper based patient record system and use a telephone and postcard system to remind patients of their appointments. They do not have a website or use other technologies to communicate with their patients. One reason given for this was that they do not need to attract new patients:

"Eh we're not sort of private based at all, so we, we, we're not really in the, in the sort of business of trying to sort of sell ourselves to be honest because…we don't need to..." **Participant 11 (Dentist).**

Team members described their patient profile as varied in terms of age group and socio-economic status. They reported it as being very family orientated with generations of families attending for many years. In recent times they have also experienced a high influx of new patients, who previously attended a nearby practice, but have reported not being happy with the treatment they were receiving.

Team members interviewed, explained how the practice functions in mixed terms. They described the team as being reasonably happy with one of the main positives being the continuity of staff. One participant commented:

"I, I think it's a reasonably happy team to be honest, but it's had, it's had its moments but everybody does, but yeah it's reasonably, reasonably happy team. There, there are a few sort of personality issues but with the number of people

we have in you're always going to get that. No, I think it's reasonably, reasonably happy." **Participant 11 (Dentist).**

Team members highlighted that there was room for improvement concerning how the team works together. This was in terms of communication and in relation to making advancements in how the practice is managed, such as the use of new technologies. One team member commented:

"I mean I would like a computer system, and I would like a switch machine in the practice, neither of which have been implemented at the moment, so the practice owner, one, thinks a computer system is too expensive and secondly the switch machine, that either one, it will cost him too much money and he's a technophobe" **Participant 14 (Dentist).**

(2) Views and awareness of guidance

All apart from one team member interviewed in Davidson's Dental Care were aware of SDCEP guidance and, in particular were familiar with the Decontamination guidance. Other guidance referred during the interviews included, BDA guidance and guidance on Legionnaire's Disease. Team members highlighted some recent challenges they had encountered in connection with decontamination guidance, in particular, in relation to changing specifications and a lack of clarity. Team members claimed that their health board had implemented recommendations before the guidance had been finalised at a national level. As a result, equipment was purchased in line with the local recommendations but ultimately this did not conform with national recommendations, leaving the practice non-compliant. This had clearly resulted in huge frustration for the practice team and impacted upon their trust in guidance in general:

"It's just the fact that, in the last few years everything seems to have changed so many times… the LDU thing came to the fore, everyone just seemed to jump headlong into it, and I was one of them, we spent thousands of pounds 'cause we'd been told by the health board to get X, Y and Z, and I just think a lot of the guidelines hadn't been finalised by that point … but the health board's jumped in and spent thousands of pounds, we spent thousands of pounds 'cause that's what we were told to do and then I had my Practice Inspection just there in December and was told that all the work that we had done eh three, three, four years ago eh none of it would pass now" **Participant 11 (Dentist).**

As a result of this experience there were mixed views about guidance documents and their importance, with team members' frustration being obvious:

"Once, once bitten I think with, with all these regulations I think I'll, I'll be shying away from it until we've got definite, definite guidance … I just get so frustrated with the, with the guidance coming, if it did come from the old Chief Dental Officer, em it, it was pie in the sky stuff, there was no real clue about how your average health service dentist at the coalface actually works and what they have to do to keep their practice going, em and I think there was this, a complete lack of clue, that seems to be changing in the last couple of years I think…" **Participant 11 (Dentist).**

"I think they certainly have a good role. I mean obviously you've got to do your best to following the guidelines that they're, they're putting out to you". **Participant 12 (Senior Dental Nurse)**

"Eh, to be honest with you, I find them over-complicated and hard work to read, so they might get a bit of a skim…" **Participant 14 (Dentist).**

In terms of how guidance is disseminated within the practice, the principal dentist reported that he would read new guidance in the first instance and determine whether any action was required. If necessary, he would filter the information to the rest of the team. He went on to comment that perhaps other team members were less concerned with keeping updated with new recommendations saying:

"I tend to find that I'm the only dentist in the practice that actually reads any documents that come into the practice. Eh, other dentists don't really read any of them at all; at the moment they don't even seem to open their, their e-mails…" **Participant 11 (Dentist).**

In terms of guidance format, a hard copy was the preference but there was also an appreciation of having the ability to convert recommendations into A4 laminated sheets to be posted on surgery walls for quick and easy access. Short concise documents in bullet point form were preferred:

"To be quite honest, when it comes to guidelines I, know that we should be moving electronically, I am very much an e-mail and internet person, however, I like a guideline set in stone and I like it on a piece of paper and if it was going to come through electronically I'd be printing it out and putting it in paper form anyway, so that it's there and I can keep it in a drawer, I can keep it in hand, or I

can put it on the notice board depending on what it is, so if you ask me seriously if it's in a fairly short way I probably would prefer it on paper, if it's long-winded and it's on e-mail I'm likely to skim over it, if not look at it at all." **Participant 14 (Dentist).**

In addition to the format of the guidance, the research evidence supporting the recommendations, as well as who had developed the guidance, was considered important in Davidson's Dental Care. It was felt important that the guidance recommendations were supported by *"cast iron scientific papers"* and that dentists' should be consulted and be able to feed into the development process.

(3) Organisational barriers and facilitators to the translation of guidance

The main barriers to the translation of guidance in Davidson's Dental Care centred on leadership and communication. The practice is owned by the principal dentist and he was identified by team members as the practice leader. It was recognised that the principal dentist's nurse also provided a form of leadership, particularly towards the dental nurses and non-clinical members of the team as was revealed in the following remarks:

*"…if it was, you know, in relation, say for example using an ultrasonic bath, I would filter it through my dental nurse and she would speak to the other dental nurses. If there was a problem it would come back to me, but I would probably give her the information first and then she would, deal with the other members of staff first of all (***Participant 11 (Dentist).**

"When we did one of the decontamination courses, they put my name down obviously to do it, I mean I do speak to the girls a lot about different things to do with the decontamination and the other parts of the, the different things in the practice, but as I say Mr Davidson would pass it on to me first of all and then he would speak to the girls as well as I would." **Participant 12 (Dental Nurse).**

There were elements of this devolved leadership which appeared to work well; however, it also emphasised a clear separation between the dentists and the other members of the team. When asked whether there was a Practice Manager within the practice one participant commented:

"Em, nope, not really, just the dentists on their own really, but as I say I don't tend to take that through from anybody else and I don't take it off any of the nursing staff to be honest because normally if its, it either comes from the principal or it comes from us really." **Participant 14 (Dentist).**

This links to a lack of clarity in relation to roles and responsibilities within the team, with confusion about who, if anyone, undertakes the Practice Management role. The principal dentist reports that he undertakes this role, however his nurse also reports to carrying out Practice Management responsibilities and other team members also identify his nurse as being the Practice Manager. Although this lack of clarity does not appear to cause conflict, it was highlighted that in other areas such as instrument decontamination, a lack of clear responsibilities does cause tension between the dental nurses:

"…if there's a changeover say at one o'clock, two o'clock, which is quite common in this practice, if the dental nurse who's just starting say at two o'clock comes in and there's a tray of instruments, were due to be sterilised and haven't been, that's probably one of the main causes of conflict within team members..." **Participant 11 (Dentist).**

Perhaps as a result of this lack of clarity, participants also reported a lack of team work within the practice:

"I know when I first started I would probably have said it was more like, more team work, now I'd say each individual surgery works on their own, whereas before if someone was free, you know you would go in and you would help out and, I feel it's not like that, it more like individual now rather than all together..." **Participant 13 (Receptionist).**

Participants also reported that the principal dentist's leadership style can act as a barrier to the translation of guidance. The practice appears very hierarchical in leadership and structure and was described by one participant as being *"governed from the top".* When discussing decision making in connection with new recommendations, one participant commented:

"The principal will tend to ask for that to be organised, or he'll organise it, but it's really not a discussion point, it's just...that's the way it's done – "can you just do this now?", "yeah, no problem"." **Participant 14 (Dentist).**

In addition, interviewees reported a lack of innovation within the practice, stemming from the principal dentist's reluctance to introduce new systems.

Team members described the practice as being *"not that far advanced"* and reported having no computer system and no switch machine:

"I mean I would like a computer system, and I would like a switch machine in the practice, neither of which have been implemented at the moment. So the practice owner, one thinks a computer system is too expensive and secondly the switch machine, that either one, it will cost him too much money and he's a technophobe...to be honest he's not erm, very…he moves eventually but it's quite slow" **Participant 14 (Dentist).**

The principal dentist reinforced this view when asked about the use of other formats of guidance documents such as apps. In relation to SDCEP's Drug Prescribing guidance document, he commented:

"*I'm quite happy with the wee green book to be honest, em I'm sure that maybe, maybe younger dentists, just sort of newly qualified, would be more interested in having, having things like that stored on their iPad or iPhone or whatever but for me it's probably not that relevant…"* **(Participant 11, Dentist).**

Finance also appeared to play an important role in terms of the principal dentist's decision making in connection with the following of new guidance. He reported that the costs and maintenance of recommended decontamination equipment makes it *"physically impossible to comply with the ideal guidelines"* and commented that the increased costs of materials also act as a barrier:

"Everything has gone up hugely in the last three or four years, the fees haven't gone up, I think that's, that's definitely a barrier to em, future improvement." **Participant 11 (Dentist).**

"Well I think it's an economic issue, I think the practice owner will restrict in some form, depending on what it is, or what's involved with it, or how much, how expensive it is to be honest." **Participant 14 (Dentist).**

The principal's reluctance to instigate change emerged from the interviews as also influencing the other team member's motivation to make changes. When referring to barriers to change that are experienced, one participant commented that the nursing staff's attitude can often act as barrier:

"There's issues sometimes with the nursing staff if you're asking them to change or do dramatic things in the practice, something that comes out with their norm, there can be some resistance in that form, 'cause they don't particularly like change and the girls don't like to be told what to do, and they have done that for X amount of years, so sometimes there's a little bit of eh...I, I wouldn't say they'll not do it, but there's a reluctance initially until you've proved to them that its worth doing" **Participant 14 (Dentist).**

In terms of communication, a lack of practice meetings was reported and it was suggested that the principal dentist seemed reluctant to have them. One explanation for this was that it was felt that team members do not speak up at the meetings, but complain to each other afterwards. It was also noted that it can be a struggle to get the whole team together:

"We don't tend to because it's very difficult to everyone in the practice in at the same time, because there's so, so many people are part-time…we did do practice meetings for a while but I tend to find that they, that most people didn't say the, tell the truth at the practice meting and then they, it soon came out afterwards so I tend to shy away from them, just through personal experience." **Participant 11 (Dentist).**

"I certainly think we possibly could have like more practice meetings, I mean we have had some in the past but, it's, nobody says what they want to say at the meeting, if you know what I mean, they end up wanting to say afterwards, which is a situation..." **Participant 12 (Dental Nurse).**

In general, communication appeared to act as a barrier within this practice, with the principal reporting that he finds that the other dentists do not communicate with him:

"I think it would involve seeing some of the dentists actually communicating better with me, rather than say going through their dental nurse you know if there's a problem." **Participant 11 (Dentist).**

When asked if there were any specific areas of communication within the practice they felt could be improved upon interviewees commented:

"I think…I don't know…that…I, I don't really, I don't really want to say anything". **Participant 13 (Receptionist).**

"There are huge aspects that could be improved with anything, I would have practice meetings, em, I would do a lot of, a few things differently to be honest

with you. What happens with our practice is that one person says something, the next person says another and we get Chinese whispers before it reaches the last person, so it would be far better to address as a group, but em, that doesn't happen at all" **Participant 14 (Dentist).**

Leadership and communication strongly emerged from these interviews as contributing to a poor attitude and lack of motivation in some team members in Davidson's Dental Care. The principal described other dentists as being apathetic and team members appear to have little interest in undertaking CPD and audit:

"If I never had to do audit again I'd be delighted… I do what I need to do which is 15 hours in three years; it's not a lot is it?...I'm not interested either to be honest, I'm not really bothered about doing those sort of things; I want to get told what I should be doing" **Participant 14 (Dentist).**

Participants also report that there is no time set aside for training and that they never have appraisals or meetings to discuss their own personal development. One participant commented that the only training they undertake is annual CPR training but that they are *"quite happy just to jog along"*.

The actual building in which the practice is housed also appeared to act as a barrier to the translation of guidance. The practice is situated up a flight of stairs and it was reported to be very limited in terms of space. Participants cited challenges connected with storage of materials, equipment and paperwork, and highlighted that these physical barriers have an impact on the quality of patient care:

"The practice premises are probably as big a barrier as anything. I'm a practice up a flight of stairs, so the Disability Discrimination Act is impossible to implement. Its two flats that were knocked into one and we are filled to the gunnels, we have no room for extension at all…so that's my biggest barrier at the moment and in the future will be the actual fabric of the building". **Participant 11 (Dentist).**

"There's things like decontamination or radiography then we absolutely we have to follow those guidelines but on the decontamination front we've had major issues…our practice isn't really designed to have a lot of these changes made 'cause we don't have the room for it, so…well we're maxed out, so if they ask us to put anything more in, we're stuck, I mean it wouldn't happen…the practice

could do with really moving and re-locating but…that would have a massive improvement for quality of care for patients…but not for me to worry about." **Participant 14 (Dentist).**

The final barrier identified as affecting their ability to implement new guidance, was the perceived regularity with which guidance changes, and a lack of clarity concerning how best implementation should take place. Added to this, as previously mentioned, was a view that evidence to support the guidance recommendations was limited, in particular, with regard to decontamination.

Interestingly, factors to emerge as facilitating the translation of guidance in Davidson's Dental Care stemmed from the practice leadership. Having a principal dentist, who keeps the team up-to-date with current regulations and who determines what will be implemented within the practice, appeared to be valued by team members, and they reported being happy to follow the rules as advised by him:

"We would obviously follow the guidelines that the Principal of the practice would obviously give to us..." **Participant 12 (Dental Nurse).**

The additional leadership provided by the Principal's dental nurse, in particular towards the other dental nurses, was also valued by team members. She was viewed as being the Practice Manager, despite this not being her formal role and she was considered the first point of contact and the person responsible for the day to day running of the practice:

"She's the Practice Manager, but I'd say she's more hands on than Mr Davidson, he's like part time, he only works four mornings a week, Daisy's there all the time, we would go through Daisy before we would go to Mr Davidson. She'd probably be my first step, unless something really important or personal I think. She tends to keep the place going" **Participant 13 (Receptionist).**

Other characteristics to emerge of the Principal's leadership style was his supportive and approachable personality. Team members confirmed that he is supportive when it comes to undertaking relevant training and that he is easy to approach and open to their suggestions, to an extent.

"I don't put up any barriers to that at all, CPD's not really an issue, there's...you have, there's quite a lot of training down in Ayrshire and Arran for dentists and dental nurses and receptionists and yeah, we, everyone goes to whatever they want to go to, I don't, I don't stop that at all..." **Participant 11 (Dentist).**

"If we ever wanted a meeting, a one to one, yes that's no problem, he certainly wouldn't say no." **Participant 12 (Dental Nurse).**

A final factor raised as potentially enabling the translation of guidance, focused on external assistance. This included financial support for purchasing new equipment, if this were recommended, appropriate training being made available to support implementing new recommendations and, in particular, in–house training tailored to individual practices. It was suggested that there be close links with a local Dental Practice Advisor, who can advise and respond to queries about new recommendations to ensure clarity:

"Financial assistance, if there's any say new equipment, new materials, to help implement it would be, would be ideal and in-house training, you know if there was a new guidance for something, if they even, eh, the local sort of Dental Practice Advisor would actually come into the practice for a chat with the practice owners, I think would be an idea." **Participant 11 (Dentist).**

Figure 7, below summarises the characteristics of the four practices.

Figure 7: Key features of Interview Practices

ARCHIBALD DENTAL PRACTICE

Demographics/Characteristics:

- Mixture of NHS and Private treatment.
- 3 Dentists, 5 Dental Nurses, 2 Hygienists, 1 Receptionist.
- Computerised patient record system.
- Urban Area.
- Traditional practice, owned by principal dentist and his wife.

Views and Awareness of Guidance:

- General awareness of SDCEP and other forms of guidance.
- View guidance as something to cherry pick information from.
- Prefer guidance documents in a hard copy format.

Barriers/ Facilitators to the translation of guidance:

- Communication (lack of team meetings, challenges of getting whole team together).
- Hierarchical decision-making in relation to the implementation of guidance.
- Resources (time and finance).
- Clear leadership.
- Training and links with external organisations.

BLACK'S DENTAL PRACTICE

Demographics/Characteristics:

- Mixture of NHS & Private, specialising in orthodontics.
- 4 Dentists, 5 Dental Nurses, 1 Administrator, 1 Practice Manager.
- Computerised system, Website & Facebook Page.
- Urban Area.
- Traditional independently owned practice in the middle of a takeover by an associate collaboration.

Views and Awareness of Guidance:

- Very aware of SDCEP and other forms of guidance.
- Challenges exist around the dissemination of guidance within the practice.
- Prefer guidance documents in a hard copy format.

Barriers/ Facilitators to the translation of guidance:

- Leadership (lack of clarity over leadership, changing situation).
- Communication (no formal communication mechanisms).
- Teamwork (lack of team involvement, no team decision making, no clear roles/ responsibilities).
- Limited training and performance feedback.
- Resources (staff shortages).

CAMPBELL DENTAL

Demographics/Characteristics:

- Fully Private.
- 2 Dentists, 4 Dental Nurses, 2 Hygienists, 2 Receptionists, 1 Practice Manager.
- Computerised system, Website, Facebook and Twitter.
- Rural Area.
- Independently owned, progressive practice.

Views and Awareness of Guidance:

- Very aware of SDCEP and other forms of guidance.
- Very positive about guidance.
- Very proactive about receiving and disseminating guidance within the practice.
- An awareness and appreciation of other guidance formats, such as web based apps.

Barriers/ Facilitators to the translation of guidance:

- Patient expectations.
- Unrealistic/Inflexible/Unclear recommendations.
- Impact of external organisations.
- Communication (hierarchical, whole team involvement, regular feedback).
- Leadership (hierarchical, strong involvement from Practice Manager, strong systems in place).
- Resources (financial, premises space).
- Teamwork (clear roles/responsibilities, motivated).
- Use of innovations.

DAVIDSON'S DENTAL CARE

Demographics/Characteristics:

- Fully NHS.
- 6 Dentists, 6 Dental Nurses, 1 Hygienist, 1 Receptionist.
- Paper patient record system.
- Rural Area.
- Traditional practice owned by principal dentist, not advanced.

Views and Awareness of Guidance:

- General awareness of SDCEP and other guidance.
- Mixed views about guidance and its importance.
- Guidance disseminated in a 'top down' manner
- Prefer guidance in a hard copy format, however there was an appreciation of electronic formats.

Barriers/ Facilitators to the translation of guidance:

- Leadership (approachable, hierarchical, dental nurse leadership, divisions by professional role).
- Communication (no formal communication mechanisms, team members reluctant to engage).
- Teamwork (no clear roles/responsibilities, lack of motivation).
- Lack of innovation.
- Resources (financial, premises, space).
- Limited training and performance feedback.
- Unclear, constantly changing recommendations.
- Support from external organisations.

4.5 Discussion

Archibald Dental Practice emerged from the interviews as being a very traditional practice, owned by the principal dentist, having been in his family for four generations. He now runs the practice with his wife and although he is the identified leader, they appear to operate the practice as a team. On the other hand, Black's Dental Practice came across as an evolving practice. Team members easily identified areas where they could improve and highlighted plans in place to address these. A sense of optimism was conveyed by team members concerning the improvements they anticipated. In the case of Campbell Dental, this appeared to be an advanced and progressive practice. Team members reported that they were up-to-date with guidance and had good systems in place to disseminate information. The strongest leadership appeared to come from the Practice Manager rather than the principal dentist and practice owner, and as the principal dentist was unwilling to participate in the interviews, it meant that this issue could not be further explored. Like Archibald Dental Practice, Davidson's Dental Care appeared traditional in structure and systems, albeit the latter was alluded to as being somewhat outdated. A traditional hierarchy appeared to exist, stemming from the principal dentist and owner and from the other dentists, while frustration seemed to exist among team members due to the lack of progression.

When considering the views and awareness of guidance across practices, there were some clear similarities to be noted. For instance, there was varying awareness of guidance, with dentists tending to be more aware. This may in part be due to guidance documents from organisations' such as SDCEP being posted directly to dentists. As a result, the dissemination systems in each individual practice, have a direct impact on how information regarding guidance is received, if at all, by other members of the dental team.

The vast majority of those interviewed expressed a preference for hard copies of guidance documents, although there was some interest in guidance being available in other formats. In some cases, this was so that they could print copies of certain sections of information in order to laminate it, and have it easily accessible in the surgery for all team members to see. Others,

particularly one dentist interviewed, were very enthusiastic about the use of new innovations, such as guidance ‘apps’. It is, however, worth considering the potential social impact of this, as a dentist referring to guidance on a mobile phone during an appointment, may appear discourteous to the patient, who may be unaware as to why a phone was being used during their consultation. This creates a link back to the concept of communication and ensuring that dentists are communicating and explaining to the patient what they are doing. In addition, in some practices there are strict rules forbidding the use of mobile phones in the surgery. Therefore, if mobile ‘apps’ were to be used in such a manner, communication within the dental team would again be vital to ensure that team members do not feel that rules are being contravened.

The notion of prioritising guidance recommendations and ‘cherry picking’ the ones they choose to follow was also evident across practices. It is perhaps the case that practices select the easy ones, which they know can easily be implemented in the first instance, with the intention of implementing the rest at a later date. However, it is possible that momentum may be lost, especially if more guidance is received and the focus shifts to a new guidance topic. Accordingly, when presenting and disseminating guidance, this may be vital information for guidance developers to take into consideration. One approach may be to disseminate a smaller number of recommendations more frequently. This again links back to the issue of communication between those developing guidance and the dental profession.

Practices reported varying trust in guidance recommendations with some believing what they are sent must be relevant, and others looking for more supporting evidence, possibly due to previous bad experiences. Interest in guidance and the guidance development process did not differ according to professional role as enthusiasm and motivation emerged from both clinical and non-clinical members of the dental team. In some cases, dentists interviewed inferred that other team members may be less aware or less interested in guidance but this was not necessarily the case.

As highlighted, leadership 'hierarchies' were evident in all four practices, albeit reflected in slightly different forms and styles. All practices had a clearly identified leader, and in all cases, this was the practice owner; however, it was clear that leadership was also provided by other team members. For instance, in Black's Dental Practice a new form of leadership was developing in terms of the associate dentists buying into the practice and hoping to put their stamp on how things were done while in Campbell Dental, the Practice Manager appeared pivotal in leading the way in terms of practice systems and, in particular, guidance dissemination. In Davidson's Dental Care, the everyday running of the practice appeared to be strongly influenced by the principal's dental nurse. These leadership strategies all appeared to act as both barriers and enablers to the translation of guidance. Some participants, both dentists and non-dentists, claimed that they were happy to be told what to do, almost relying upon it. In Archibald Dental Practice, Black's Dental Practice and Davidson's Dental Care, participants referred to *"following the rules"*. However, it was also clear that some team members found the lack of involvement in decision making frustrating.

In terms of communication and management, Campbell Dental was the only one that reported having regular and well organised meetings, possibly due to the leadership of the Practice Manager. Methods for the dissemination of guidance within the teams also varied, with some reporting better systems than others. Campbell Dental reported what they considered to be an effective dissemination system, with their Practice Manager as the pivotal point of contact, taking leadership and responsibility. This suggests that there may be an association not only between communication and the dissemination of guidance but also between leadership and effective guidance dissemination. It is worth noting that Campbell Dental was the only practice taking part in these interviews with a dedicated Practice Manager, again suggesting that this may be influential on the translation of guidance. They were also the only predominantly private practice and this may also be influential.

Context can be viewed in a variety of ways. It can be seen in terms of the patients, the team roles, the practice setting or the actual topic of the guidance,

albeit this is usually referred to as the guidance 'content'. During these interviews, a range of 'contexts' emerged as influential on the translation of guidance. Firstly, the expectations of patients were mentioned by team members in both Archibald Dental Care and Campbell Dental. In the former, this was in relation to feeling pressurised to allocate emergency appointments. The ways in which different practices manage emergency appointments can vary widely. Sometimes this is due to financial constraints and having to see a certain number of patients per day, or only allocating a certain length of time per appointment. Some practices leave 'emergency slots' available each day while others have no slots, requiring dental teams to work through lunch breaks or at the end of the day to accommodate emergencies. This is not necessarily at the discretion of the individual dentist but may lie in the hands of the principal dentist/owner or be due to company policy. In Archibald Dental Care trying to accommodate emergency appointments emerged as a stressful process, and the time implications of this presents the possibility of corners having to be cut.

In Campbell Dental patient expectations were in relation to the high standards, which their patient base expected, as a result, of being a predominately private practice set within a reasonably affluent area. These two very different examples of patient expectations highlight the challenges faced in relation to translating guidance, regardless of the resources or structures in place.

In terms of practice context some clear differences emerged in terms of professional role. On the whole, dental nurses and dentists were provided with time to undertake training in some form within most of the practices; however, administrative team members seemed to struggle to identify and attend training. In some cases, this presented as a lack of interest or motivation but it may be that it also stems from the fact that there is no formal requirement for them to do so and limited training courses available. In 2012 a Practice Managers' vocational training scheme was introduced by the Dental Directorate of NHS Education for Scotland. This training lasts 15 months and is accredited to degree level. Although this is not a formal requirement, this may encourage non clinical team members to get more involved with training and encourage team leaders to create resources for them to do so. It may also provide administrative

team members with more confidence when undertaking their role, and in turn, impact upon their involvement in the translation of guidance, through increased learning and support.

Particularly in Archibald Dental Practice and Davidson's Dental Care, the dentists appeared most influential in the decision making process concerning which recommendations were to be followed, and in some cases, the other team members did not feel that they were provided with the supporting information. During interviews across all practices, much reference was made to "the dentists" or "the girls", to refer to the dental nurses, demonstrating the existence of two distinct, and perhaps, unequal groups within the dental team.

The context of the practice in relation to the actual premises was another theme to emerge in relation to the translation of guidance. This was in terms of patient's ability to access the premises, working across multiple floors and the impact that this has on communication between team members, space to house recommended equipment and storage of paperwork as per the servicing and maintenance of equipment. A specific example of this was the installation of a local decontamination room, as per decontamination guidance, and having to transport dirty instruments between floors or actually having an additional room at all to convert into a decontamination area.

Finally, the context or focus of the actual guidance also emerged as influential on the translation of guidance. All practices referred to SDCEP's decontamination guidance during the interviews, as this 'hot topic' within dentistry, was clearly considered something they felt they should be following. Although other guidance topics were mentioned, the majority of examples provided and changes being made in these practices, focussed on decontamination. This may suggest that when guidance is high profile, practices feel more compelled to comply with it, whereas other guidance topics, surrounded by less publicity, may be viewed as open to negotiation. It may also be the case that dental professionals are following guidance because they felt they 'ought to' rather than actually wanted to. As previously mentioned in terms of prioritising, participants in Archibald Dental Care and Campbell Dental

referred to being selective about the recommendation they followed, making reference to "*dipping in and taking bits out",* and it not being possible to implement it all with *"common sense having to prevail".*

The presence and styles of practice systems and staff resources also varied between practices. This was in terms of systems for communication and guidance dissemination, but also in relation to systems to facilitate and encourage staff training, to encourage staff development and systems for staff appraisals. Where such systems did exist, it was evident that team members were more enthusiastic and motivated.

Resources, especially time and money, emerged as barriers to the translation of guidance in all practices. Whilst this may have manifested itself differently across practices, for example, the cost of maintaining and servicing equipment, time to undertake training, staff shortages or size of premises, it was evident that resources were influential on a number of the themes to emerge.

In identifying these emerging themes, it should be noted how interlinked they are. Elements of a practice's culture, such as communication methods, management, decision making and practice processes, systems and learning, may all stem from the practice leader. Others within the team may undertake leadership within the practice and have responsibility in certain areas, but they may have been selected for that role by the overall leader, in acknowledgment that that is an area in which they excel and, ultimately this will benefit the running of the practice. In addition, guidance dissemination and decision making all contribute towards the overall communication system of the practice.

It could also be argued that leadership and communication are closely interlinked. Style of leadership and individual characteristics undoubtedly influence how communication occurs within a team, and often the manner in which a team functions tends to be strongly influenced by this. Generally, team members take their 'lead' from the person they identify to be their leader, with the result that, not only communication, but their entire work ethic and attitude may be influenced by this.

Leadership and communication are clearly two key areas which require further exploration in order to understand the wider impact that the structure, culture and management of dental practice may have on the translation of guidance. The findings of these interviews have classified these two overarching concepts into a number of specific themes to be examined greater depth.

4.6 Summary, Implications and Reflections

Seven key concepts emerged from the literature review in relation to the translation of guidance in primary care organisations. These were communication, teamwork, flexibility, prioritisation, collaboration, guidance dissemination and expectations. Interviews with dental team members supported these findings. Two overarching concepts, those of communication and leadership, emerged from the dental team interviews as influential on the translation of guidance within dental practices. Within these two concepts a number of themes were evident, many of which overlapped with the literature review findings.

Through integration of the literature review and interview findings, ten concepts were identified for further exploration. These were: communication, teamwork, flexibility, prioritisation, collaboration, guidance dissemination, expectations, context, leadership, and practice systems and learning. These concepts provide an initial starting point for the development of a dental team questionnaire to explore structure, culture and management in dental practices. Development and piloting of this instrument are described in Chapter 5.

It should be noted that whilst the final number of interviews undertaken reflected the number of participants targeted in the recruitment protocol, this represented a minority from each practice. In some cases, ‘key’ team members identified by participants were unavailable or unwilling to participate. This may have added to the overall findings and have allowed some findings to be explored in greater depth in relation to the specific practice context. However, this in itself provided an insight into the practice teams in relation to the structure, culture and management currently existing.

CHAPTER 5: QUESTIONNAIRE DEVELOPMENT

5.1 Introduction

This chapter describes the process undertaken to develop a self-report dental team questionnaire to explore structure, culture and management in dental practices in Scotland.

As mentioned in Chapter 4, the findings from the literature review and dental team interviews identified ten concepts for inclusion in the dental team questionnaire. These concepts are very broad, each with their own extensive body of literature. Therefore, before identifying whether an existing instrument could be used or whether a new one should be developed, it was important to define each concept based on the literature review and interview findings to identify the specific elements of each concept that should be included, and set them within the context of the translation of guidance within general dental practice.

This instrument, either identified or developed, would be used within a dental team questionnaire. The aim of this questionnaire was to determine the organisational characteristics, which are most influential on the translation of guidance in dental practices.

5.2 Definition of concepts

The next section defines each of the ten concepts, setting them within the context of the literature review and interview findings, with particular focus on the translation of guidance in dental practices.

(1) Communication

Communication was one of the most prominent themes to emerge from the literature review and interviews. The literature identified that communication can act as both a barrier and a facilitator to the translation of guidance within

primary care organisations. When explored in greater depth during the dental team interviews, the findings suggested that communication was pivotal in everyday practice, influencing not only the dissemination of information within the team, be it formally in terms of practice meetings or informally in terms of ad hoc discussions, but also impacting upon the overall atmosphere and culture that exists. Interview findings also identified communication as a factor in relation to how guidance developers format and disseminate their product to the wider dental profession.

The interviews also explored communication within the dental team, looking both within and across professional roles and the impact this has upon the relationships and dynamics within the team. Communication with external organisations and dissemination and awareness of new guidance and recommendations were also explored and this data suggested that communication is not only instrumental within the dental team but is interlinked with a number of other factors, which also appear to influence knowledge translation, such as team work, leadership, collaboration, practice systems and learning as well as the prioritisation and dissemination of guidance.

Taking these findings forward, the key areas identified for inclusion in the instrument were: communication within the dental team, how information relating to new guidance and recommendations are disseminated within the team, and team member participation in decision-making in relation to the translation of guidance in their practice.

(2) Teamwork

Team work was another prominent theme to emerge specifically from the literature review as facilitating the translation of guidance. Team work can impact upon a whole range of organisational functions, with team working anticipated to lead to better problem solving, more innovative decision making and greater engagement in implementing potential solutions[209]. Team work is also thought to promote organisational learning, and in terms of quality improvement, it is expected to lead to better processes of care and greater adherence to new systems and procedures[209].

Relationships within the dental team were explored during the interviews and this data highlighted the importance of how the team works together both within and across professional roles, the existence of clearly defined roles and responsibilities, methods of communication and working together. Aspects of team work such as how they disseminate and share information and systems of working, appeared to be strongly associated with communication, and it could also be argued that the existence of team work within a practice may be as a result of the type of leadership that exists.

The elements of team work identified for inclusion in the instrument were: how the team works together within and across professional roles, systems and processes of working, how open the team is to new ideas and methods of working, motivation and work ethic.

(3) Flexibility

The notion of flexibility initially emerged from the literature and referred to an organisations' ability to adapt to change, as well to the parameters of the guidance, and whether there is flexibility in implementation or whether implementation is prescribed. The interviews explored these concepts in greater depth and suggested that the process of guidance prioritisation, be it which guidance document to implement or which specific recommendations from one guidance document be put in place, may be influential. An example of this may be whether a guidance is considered to be a 'hot topic' or whether it is considered more socially acceptable to follow perhaps due to peer pressure associated with doing the right thing.

Over and above the guidance itself, the interviews identified that the 'traditions' that exist within practices and perhaps a lack of flexibility or autonomy within a practice may influence team members' ability to follow guidance, their ability to introduce new methods and systems, and to engage with new technologies

The aspects of flexibility considered important for inclusion in the instrument were: methods of tradition, practice procedures/rules, proactivity within the team and whether the team was open to new methods of working or innovations.

(4) Guidance Prioritisation

The notion of guidance prioritisation initially emerged from the literature review. The literature identified that prioritising guidance, whether by means of incentivising specific recommendations or through endorsement by key figures or organisations, may influence its uptake in practice. The literature also suggested that the translation of guidance may be associated with the wider context within which the guidance is being implemented and it appeared that, in some cases, guidance or recommendations were prioritised based on current policy initiatives or due to the existence of funding grants or relevant training to support their implementation.

These factors were examined during the interviews; however, data from dental team members highlighted that prioritisation may occur at a different stage in dental practices compared to that identified in the literature. This may in part be due to the fact that the majority of the study settings identified in the literature were within general medical practice. Rather than being strongly influenced by incentives or endorsements, dental practices and indeed individual team members, appeared to prioritise individual recommendations, cherry picking from guidance documents based on their ease of implementation or by choosing the recommendations they personally believed to be most important in terms of patient safety. The concept of flexibility appears to overlap substantially with the notion of ‘guidance prioritisation’.

These aspects of guidance prioritisation, as well as how professional role influences the decision-making behind this prioritisation process, were identified for inclusion in the instrument.

(5) Collaboration

Although similar to the concept of team work, collaboration also emerged from the literature as influential on knowledge translation within primary care organisations. Where it differs from team work is in relation to the collaboration or engagement with organisations both within the healthcare system and externally. In that respect, collaboration is also closely associated with communication, encompassing the ideas of patient involvement, working with

guideline development groups and disseminators as well as other external bodies. It also includes the notion of patient involvement in the development of new guidance or recommendations.

Interview data suggested that within dental practices, team work, communication and collaboration across professional roles, and with other professional organisations, may influence the translation of guidance. The interviews specifically identified the distinction between professional roles. In his 2005 work, Ferlie identified the importance of boundaries between professional groups[210], and found that varying roles, social boundaries and the distinctive styles of different professional groups may limit the adoption of innovations.

In selecting or developing an organisational instrument, it was, therefore, important to include items relating to the impact of professional role, how the dental team engages with external organisations and patients and as well as with other stakeholders.

(6) Guidance Dissemination

The concept of guidance dissemination influencing the translation of guidance initially emerged from the literature review. The review findings mainly focussed on external dissemination and included the notion of guidance overload, leaving healthcare professionals uncertain as to which guidance is most up-to-date, the format and accessibility of guidance, how healthcare professionals are actually made aware of guidance, whether there is publicity or raised awareness around it, and whether it is disseminated from one or more recognisable bodies.

When examined within the context of the dental team, it emerged that there were a number of themes packaged within this concept of dissemination. Interview findings particularly highlighted how new recommendations or guidance are disseminated internally within the dental team, for example, how they are discussed and communicated and the availability of documents for reference by all team members. Methods of dissemination or indeed the lack of them, appeared to impact upon team members' ability and motivation to effect implementation. This very much links with the notions of communication and

practice leadership. Thus, dissemination and discussion around new guidance within the dental team, and the formats in which they use guidance, were identified as key areas for inclusion in the instrument.

(7) Expectations

The concept of expectations also originally emerged from the literature. This covered a range of pressures which manifest themselves as expectations experienced by those developing and implementing new guidance, by the healthcare professionals who feel under pressure to make changes in their practice, and also by patients whose expectations may have been affected as a result of media information or information provided by healthcare professionals. These pressures also relate to the context within which they are experienced. For example, pressures may arise due to the practice context, with the socio-economic area in which a practice is based, reflecting the level of patient education and lifestyle choices in that area. This was also a theme to emerge from some of the interviews, where team members were found to be working in a particularly affluent socio-economic area.

The interviews also identified pressures faced by healthcare professionals stemming from both within and out-with their organisation. Whilst some external, policy and patient level barriers were identified during the interviews, the main expectations appeared to be experienced from within the dental team itself. These were in relation to team members' expectations of themselves or their team and their desire to follow best practice and provide good patient care.

With this in mind, when considering expectations and how to explore this concept further in the dental team questionnaire, views in relation to quality, best practice and practice standards as well as pressures experienced in day-to-day working, were considered sufficiently important to include.

(8) Context

The notion that context can influence the translation of guidance emerged from the interviews. Context can have a number of meanings but the interviews specifically identified four areas associated with the translation of guidance. The

'patient context', relating to the types of patients being treated within a particular practice; the 'practice context', referring to the socio economic area within which the practice is set, as well as the actual practice premises themselves; the 'professional context', referring to the differences in decision-making by professional role and finally 'the guidance context'. Guidance 'context' may also be referred to as the content or topic of guidance, and the interview findings identified the importance of this in relation to the translation of guidance, particularly concerning the wider social, economic or political context into which it is being implemented. An example of this would be where the guidance is of high political importance or has significant consequences in terms of patient safety, resulting in the context within which it is being implemented, being very different to that of another guidance document.

Some of the areas in relation to context are challenging to capture in a quantitative instrument. Aspects such as patient type, practice premises and socio-economic area will be explored in greater depth using qualitative case studies; however, through the use of demographic questions it should be possible to gather a sense of context. In particular, the instrument will focus on the context within which the team work and explore the management, procedures, work ethic and decision-making processes that exist.

(9) Leadership

Since *High Quality Care for All*[211] in 2008, leadership has been a high priority and has prompted a number of initiatives including the development of a leadership competency framework for GPs[200]. The interviews with dental team members identified that leadership is possibly one of the most crucial elements in terms of the translation of guidance and new recommendations. This is in line with the findings of Ham and colleagues who highlighted the crucial role leadership plays in the success of organisations. Referring to the example of the *GP Commissioning Consortia*, they commented that it "will *depend on the engagement of GPs and the leadership they provide."*[212]

There is no consensus about the most appropriate leadership model for an organisation such as the NHS. It is likely that GPs may need a combination of

styles, and this combination may differ for dentists and other healthcare professionals, due to the different systems and constraints within which they work. The interviews highlighted that dental practices have different leadership 'hierarchies' or systems. Those who provide leadership vary across practices, from the principal dentist/practice owner, to a practice manager, a head nurse or a combination of professional roles. The idea of shared leadership, where leadership is distributed across different levels, which was evident during the practice interviews, is also something which was identified as part of the government's strategy outlined in *Equity and Excellence: Liberating the NHS*[213] and so is particularly relevant. Unsurprisingly, communication and leadership seemed to be strongly associated.

Given the breadth of literature concerning leadership, it was important to identify the specific aspects of leadership to be explored, which are specific to the dental team context. The areas identified in the interviews were in relation to decision-making, and how involved team members were in this process, how information was shared within the team, how supported team members were in terms of their performance and professional development, and the types of organisational and management systems that existed.

(10) Practice Systems and Learning

Practice systems and learning emerged from the interviews as intrinsically interlinked with leadership. Indeed, effective leadership is considered an essential component in creating a strong learning culture within an organisation[214]. The interview data highlighted how greatly systems can vary across practices in relation to a wide range of aspects including, organisation, processes and methods of working, appraisal and staff development, to name but a few. These systems may impact upon communication, decision-making, training, staff morale and motivation as well as the general administration of the business, all of which have a direct impact upon patient care.

The areas specifically identified through the interviews in relation to the translation of guidance were: staff training, including the availability of appropriate training as well as having the support of supervisors to undertake it;

performance feedback and how this may impact upon staff morale and motivation; how the practice responds to new guidance, changing recommendations and new innovations as well as communication and decision making methods.

5.3 Aims and Objectives

The primary aim of this phase of the study was to develop a self-report questionnaire to explore structure, culture and management in dental practices.

Having identified and defined the ten key concepts for inclusion, there were a number of ways to approach this: (1) through the identification of an existing or 'off the shelf' instrument, which could be used, (2) by adapting an existing instrument, or (3) through the development of a new, 'fit for purpose' tool

With this in mind there were four specific objectives:

1. To review the literature around existing instruments;
2. If no existing 'fit for purpose' instrument exists, then modify an existing instrument or develop a new one;
3. Develop a questionnaire comprising this instrument together with questions to determine compliance with key recommendations in three dental guidance areas and demographical questions. These guidance documents were selected based on the three groups their recommendations target (Dentists; Receptionists and Practice Managers; The whole dental team).
4. Pilot the questionnaire in a dental practice setting.

5.4 Methods

(1) Review the literature to identify any existing instruments

A review of the literature was undertaken in order to identify existing instruments measuring organisational characteristics, covering any of the ten concepts identified in the literature review and interviews. These instruments were assessed based on how many of these concepts they covered, whether the instrument had been validated, if it had been used in a UK primary care setting, usability and ability to be completed by the dental team as a whole.

Information and relevant literature on all identified instruments was obtained and reviewed in detail. An initial screening was carried out and any instruments deemed completely unsuitable or unavailable for use (e.g. due to copyright) were excluded. Following this, the remaining instruments were considered in greater detail, with developmental papers and copies of the instruments being sought and examined, where available. During this process further instruments were excluded. The remaining instruments were then mapped and assessed against each of the ten key concepts and their definitions within the context of guidance translation within general dental practice. Full details are provided in Table 4.

(2) Modify an existing instrument

No one existing instrument was identified as covering all ten key concepts. However, one instrument was selected for use, with modification. This was the 'Organisational Climate Measure' (OCM)[14]. Copyright was not required for the use of this instrument.

The decision not to develop a new instrument was taken based on the plethora of existing, already validated, instruments. This was reinforced by advice provided by a leading researcher in this field and author of one of the reviews utilised during the literature search. They highlighted that few instruments in this discipline have been thoroughly tested and strongly recommended the adaptation of an existing tool in order to further the evidence base.

Once selected, the OCM instrument was taken in its original form and the ten key concepts and emergent themes were mapped to the original questions. This was an iterative process with the researcher adapting the wording of the instrument to make it more specific to the area of investigation, with care taken not to lose the meaning of the original questions. An example of this is in the dimension of 'Autonomy'. The original OCM question was 'Management let people make their own decisions much of the time'. This was re-worded to read, 'The principal dentist/clinical lead lets team members make their own decisions'. Questions around the two concepts not featured in the original

instrument, guidance dissemination and prioritisation, were added, ensuring that they were in keeping with the original style of the instrument.

This process mapped to the process of instrument development described in the health measurement scale literature[215]. A key advantage of using an existing instrument was that the instrument scales had already undergone rigorous assessment. As part of the modification process, the researcher altered the wording of some questions to make them more dental team specific rather than utilising terminology from the manufacturing industry, where the instrument was originally developed. This was based on literature findings as well as the qualitative interviews undertaken. Advice was sought from dental team members and the researcher's supervisors during this process. The modified instrument was piloted within the study population to ensure the terms were understandable. In addition, internal consistency was measured using Cronbachs's alpha and a thorough piloting process was used to ensure content validity.

This adapted version of the OCM was renamed the 'Dental Practice Organisation Measure' (DPOM) for the purposes of this study.

(3) Questionnaire development

A dental team questionnaire was then developed comprising the newly developed DPOM Measure. In addition, questions to determine compliance with three topics of dental guidance were included. The three topics of guidance covered were the Scottish Dental Clinical Effectiveness Programme's (SDCEP) Emergency Dental Care Guidance (EDC)[9], Oral Health Assessment and Review (OHAR)[10] and Drug Prescribing (DP) for Dentistry[11]. When developing the questions around compliance with these three topics of guidance, the researcher worked closely with members of the SDCEP guidance development team for each of the guidance documents as well as implementation researchers experienced in these topic areas to ensure they accurately reflected the recommendations contained in the guidance, and were clear to interpret and answer. These three topics of dental guidance were deliberately selected based on the differing dental contexts and team members they target.

Recommendations within the EDC guidance specifically target front-line members of the dental team such as Receptionists and Practice Managers. OHAR requires input from the whole dental team and DP specifically targets the individual dentists' prescribing behaviour.

Demographic questions were also included in the questionnaire. The interview findings were used to identify the appropriate practice demographic, and descriptive information relevant to the translation of guidance and questions, were constructed appropriately.

In order to initially test the clarity and usability of the questionnaire it was informally piloted with a group of implementation researchers (n=4) and members of the SDCEP guidance development team (N=2). During this process, feedback was given on the instructions provided, the wording of the questions and the response scale being used.

(4) Questionnaire piloting

The purpose of the pilot was to test the content validity of the questionnaire. In particular, attention was paid to the applicability of the DPOM instrument for completion by the whole dental team, clarity of the instructions and ease of completion and length of time to complete. In addition, the pilot explored the process of disseminating the questionnaire to a larger sample of practices.

Six dentists registered with the Scottish Dental Practice Based Research Network (SDPBRN) as Rapid Evaluation Practitioners (REPS) were invited to participate in the pilot. These were dental practitioners who had registered an interest in taking part in dental health services research and hence were considered an appropriate population within which to test the questionnaire's relevance to the dental setting. Information packs were sent to all six dentists inviting them to participate. Copies of the invitation letter and information sheet can be found in Appendices 10 and 11. Dentists were incentivised to participate through a REP payment scheme. Follow up phone calls were carried out to discuss the study in greater detail and provide dentists with an opportunity to ask questions. Four of the six dentists contacted participated in the pilot study.

Participating practices were sent enough questionnaires for all team members to complete. Questionnaires were sent to the named dentist in the practice who acted as practice liaison for the study. Each dental team member was provided with a questionnaire along with a covering letter explaining the purpose of the pilot study and the key areas that would be addressed in the feedback session. Team members were asked to complete the questionnaire and return it to the practice liaison, in a sealed envelope provided for confidentiality. The practice liaison collected all questionnaires and returned them to the researcher in a large freepost envelope provided.

At the point of agreeing to participate, the researcher made arrangements to either visit the practice or to speak to the practice liaison for feedback. Feedback sessions were carried out in a variety of formats including: an informal practice focus group, one-to-one and group, face-to-face/telephone interviews and in-practice visits. A topic guide was developed for use during the feedback sessions. This covered: (1) applicability of the DPOM instrument for completion by the whole dental team; (2) clarity of instructions; (3) ease of completion; (4) length of time to complete; and (5) distribution and dissemination. A copy of the feedback session topic guide can be found in Appendix 12.

Following the feedback sessions, practices were sent a summary of their practice's results. As an added incentive, and as a result of feedback provided in the pilot, teams were given the opportunity to identify developmental points based on their results, in order to receive Continuing Professional Development (CPD) for participation. An example of the feedback summary produced can be found in Appendix 13.

5.5 Results

(1) Review the literature to identify any existing instruments

From a review of the literature, 18 potential instruments to measure organisational characteristics were identified. Nine instruments were identified from a review of organisational instruments conducted by Scott and

colleagues[216] in 2003. They evaluated 13 instruments in total in their review, nine of which had been used in a health care setting. These were the 'Competing Values Framework'[217-219] (CVF), 'Quality Improvement Implementation Survey'[220], 'Organisational Culture Inventory'[221-224], 'Harrison's Organisational Ideology Questionnaire'[225-227], 'Hospital Culture Questionnaire'[228], 'Nursing Unit Cultural Assessment Tool'[222,229-231], 'Practice Culture Questionnaire'[232], 'McKenzie's Culture Questionnaire'[233] and the 'Survey of Organisational Culture'[234]. The four remaining instruments, which had not been used in a healthcare setting, were the 'Corporate Culture Questionnaire'[235], the 'Core Employee Opinion Questionnaire'[236], 'Hofstede's Organisational Culture Questionnaire'[237] and the 'Organisational Culture Survey'[238].

Three other instruments were identified from Mannion et al's review *Measuring and Assessing Organisational Culture in the NHS*[31]. These were the 'Van der Post Questionnaire'[239], the 'Group Practice Culture Questionnaire'[240,241] and the 'Dennison Organisational Culture Survey'[242]. Two instruments were also identified through consultation with experts in the field. These were 'SafeQuest'[243], and the 'Organisational Climate Measure'[14].

Table 6 summarises all 18 potential instruments. After the initial screening process, seven instruments were excluded for practical reasons. Table 6 details reasons for exclusion. Instruments excluded after the initial screening were the 'Organisational Culture Inventory', 'Nursing Unit Assessment Tool', 'Corporate Culture Questionnaire', 'Core Employee Opinion Questionnaire', 'Hofstede's Organisational Culture Questionnaire', 'Organisational Culture Survey' and 'Dennison's Organisational Culture Survey'.

Following the initial screening, the remaining 11 instruments were examined in greater depth, with developmental papers and copies of the instruments being sought and examined. Accessing copies of some instruments was challenging, given many had been developed over 20 years ago. As a result, a further four instruments were excluded as full copies of the instruments were not available to access. The four instruments excluded at this stage were the 'Survey of

Organisational Culture', 'Harrison's Organisational Ideology Questionnaire', 'MacKenzie's Culture Questionnaire' and the 'Van der Post Questionnaire'.

The remaining seven instruments were then mapped and assessed against each of the ten concepts they would align and with the particular themes identified for inclusion in the questionnaire. This process is illustrated in Table 7.

Based on this mapping process, no instrument emerged as a perfect fit in terms of exploring structure, culture and management in dental practices, as defined by the literature review and interview findings. However, following review of these seven instruments, the application of a mapping exercise and through discussion with experts within this field, the Organisational Climate Measure (OCM) instrument was decided upon, with adaptation.

The rationale for this decision was that the OCM covered eight of the ten themes, was clear and straightforward to complete; further, it was believed that it could be easily adapted to suit the dental population and was an already validated instrument, albeit in a different setting. Advice from researchers, with expertise in this area, reinforced this decision. Given that few instruments used in this field have been thoroughly tested to date, this study provided an opportunity to add to the existing evidence base.

This decision was in line with Glasgow and colleagues' rationale for their choice of measures to monitor implementation[244]. In their study, the authors highlighted that often the researcher has to make a choice between using 'off the shelf' measures that have been validated, but are not exactly right for the given application, and specifically developing brand new measures. They argue that a good middle ground in this situation is to include the most relevant items from previously validated measures alongside new purpose developed measures. Based on this rationale, the OCM instrument was selected, with a view to modifying it to incorporate all ten key concepts.

(2) Modify an existing instrument

The OCM was selected for use with adaptation. As Illustrated in Table 7, this tool incorporated eight of the ten key concepts to emerge from the literature review and interviews. Furthermore, it had the potential to be completed by the whole dental team although with some modification to ensure the language was dental specific. Moreover, it had been used in the UK, albeit not in a healthcare setting, and appeared clear and straightforward to complete.

The OCM was originally developed and validated with a large sample of participants from across 55 manufacturing organisations and is theoretically underpinned by Quinn and Rohrbaugh's Competing Values model[15]. In previous studies exploring organisational characteristics, concern has been raised about the range of respondents included. In their 2000 paper Wilderom et al argued *"it is crucial that researchers investigate all sorts of organisational members, representative of all the various hierarchical, departmental, divisional or professional entities*."[245]. Therefore, the developers of the OCM gave considerable attention to the content and wording to ensure it was relevant and understandable to all team members. The intention was that the OCM would be theoretically grounded and applicable across a range of work settings, targeting all employee levels, making it appropriate for completion by the whole dental team.

Table 6: Summary of Potential Instruments

INSTRUMENT	INITIAL SCREENING	DETAILED REVIEW
Competing Values Framework (CVF)	Included	Included
Quality Improvement Implementation Survey	Included	Included
Organisational Culture Inventory	Not included – under copyright	
Harrison's Organisational Ideology Questionnaire	Included	Not included – unavailable
Hospital Culture Questionnaire	Included	Included
Nursing Unit Cultural Assessment Tool	Not included – not considered useful for assessing organisational characteristics	
Practice Culture Questionnaire	Included	Included
MacKenzie's Culture Questionnaire	Included	Not included – unavailable
Survey of Organisational Culture	Included	Not included – unavailable
Corporate Culture Questionnaire	Not included – only available commercially	
Core Employee Opinion Questionnaire	Not included – only covered human relations issues	
Hofstede's Organisational Culture Questionnaire	Not included – not widely used in English	
Organisational Culture Survey	Not included – only addresses superficial issues	
Van der Post Questionnaire	Included	Not included – unavailable
Group Practice Culture Questionnaire	Included	Included
Dennison's Organisational Culture Survey	Not included – only available online	
SafeQuest	Included	Included
Organisational Climate Measure (OCM)	Included	Included

Table 7: Instrument Mapping to the Ten Key Concepts

INSTRUMENT	UK PRIMARY CARE	WHOLE TEAM	TEN KEY CONCEPTS										TOTAL No. CONCEPTS COVERED	OTHER COMMENTS
			1	2	3	4	5	6	7	8	9	10		
Competing Values Framework (CVF)	NO	YES		X	X	X				X	X		5	Used in a UK hospital setting. Complex to complete.
Quality Improvement Implementation Survey	NO	YES					X				X	X	3	Based on CVF; Long and complex.
Hospital Culture Questionnaire	YES	YES	X	X						X	X		4	Used in a UK private hospital setting
Practice Culture Questionnaire	YES	YES	X	X	X		X					X	5	Clear and straightforward. Short
Group Practice Culture Questionnaire	NO	YES	X	X		X				X	X	X	6	Used in primary care in the US
SafeQuest	YES	YES	X	X					X		X	X	5	Patient safety focussed: Clear & straightforward
Organisational Climate Measure (OCM)	NO	YES	X	X	X		X		X	X	X	X	8	Used in UK manufacturing setting; Clear and straightforward; Long

KEY CONCEPTS:

1. Communication
2. Teamwork
3. Flexibility
4. Guidance Prioritisation
5. Collaboration
6. Guidance Dissemination
7. Expectations
8. Context
9. Leadership
10. Practice Systems and Learning

The OCM consists of 17 ‘dimensions’ as detailed in Table 8 below. The response scale provided for the questions was 1-4, where 1 is ‘definitely false; 2 is ‘mostly false’; 3 is ‘mostly true’; and 4 is ‘definitely true’.

Table 8: Organisational Climate Measure (OCM) Dimensions

(1) Autonomy	(10) Innovation and Flexibility
(2) Integration	(11) Outward Focus
(3) Involvement	(12) Reflexivity
(4) Supervisory Support	(13) Clarity of organisational goals
(5) Training	(14) Efficiency
(6) Welfare	(15) Effort
(7) Formalisation	(16) Performance Feedback
(8) Tradition	(17) Pressure to Produce
(9) Quality	

Eight of the key concepts identified from the literature and interview findings were covered by these 17 dimensions, with a considerable amount of overlap between scales. The main area of revision was in relation to the instrument wording which had to be modified to make it specific to the dental team or the specific area identified as relevant to the translation of guidance. When undertaking this process, the researcher sought advice from dental team members to ensure the language was appropriate and understandable to the target population.

The OCM did not address the areas of guidance prioritisation and dissemination. Therefore, questions relating to these concepts were constructed. The researcher took care to ensure that they were in keeping with the original style of the instrument. Once all questions were constructed, a mapping process of the instruments to the ten key concepts was undertaken to ensure all concepts were adequately covered in the revised instrument. The result of this mapping process is provided in Appendix 14.

(3) Questionnaire development

Once the revised OCM, now containing 19 dimensions, was finalised, this formed Section 1 of the dental team questionnaire and was named the Dental Practice Organisation Measure (DPOM).

Section 2 of the questionnaire contained questions to determine compliance with three topics of dental guidance. The three topics of guidance were specifically selected based on the differing dental contexts and team members they target. ‘Drug Prescribing’ is clinician focussed, targeting dentists who are primarily responsible for dental prescribing. It was also one of the guidance documents which was referred to most by dentists during the interviews, and one which they suggested was made use of in their day-to-day practice. The ‘Emergency Dental Care’ guidance was selected due to its relevance to the whole dental team. Dental receptionists, Practice Managers, and those involved in developing procedures within the practice regarding requests for emergency or unscheduled care, all have a role to play in the translation of this guidance. Finally, the Oral Health Assessment and Review guidance is applicable to a range of clinical roles in the dental team, including dentists, dental nurses and hygienists. Administrative staff also have a role to play in the implementation of this guidance in relation to the allocation of appointments at varying intervals, and putting systems in place to manage this as well as the paperwork associated with the creation of long term personal care plans.

In order to build up a full picture of the practice and the team, the last section of the questionnaire asked demographical questions. This would allow comparisons to be made across settings and to test the impact that these demographics may have.

In order to test the usability of the questionnaire, it was informally piloted with a group of researchers and guidance developers. Through this process, feedback was provided on the instructions provided, the wording of the questions and the response scale used. Based on this feedback, some changes were made to Section 1 of the questionnaire to make the questions more specific to the dental context and, in particular, the management structure that exists within dentistry in Scotland. Modifications were also made to Section 2 to ensure the guidance compliance questions were specific to the recommendations contained in the guidance documents and hence compliance could accurately be determined from the data. This process resulted in a questionnaire ready for formal piloting. A copy of this pilot questionnaire can be found in Appendix 15.

(4) Questionnaire piloting

The questionnaire pilot took place in four dental practices in Scotland. All dental team members were invited to participate. Questionnaires were completed at the end of January 2013 with feedback sessions held in February 2013. In total 35 questionnaires were completed. Feedback sessions took place after all questionnaires were returned, allowing the researcher to look at each practice's data and identify areas where questions had been poorly completed or there was significant missing information. These areas were then explored during the feedback sessions.

The four practices covered a range of dental practice structures, such as independently owned, company owned, salaried services, fully NHS and mixed NHS and private practices. This was beneficial for the pilot study to ensure the questionnaire was applicable to the range of dental practices structures that exist across Scotland. Pilot practices have been given pseudonyms for the purpose of reporting the pilot findings.

McLaren Dental Care was an urban practice offering a mixture of NHS and private treatment. It comprised 12 team members made up of four dentists, six dental nurses, one hygienist, one receptionist and a practice manager. The practice is owned by Integrated Dental Holdings (IDH). IDH is a large dental corporate company, which owns a network of dental practices throughout Europe. In Scotland it owns approximately 35 practices, primarily focussing on NHS dentistry but also providing some private and specialist services. Ten team members completed the pilot questionnaire (83%). This was made up of three dentists, four dental nurses (two trainees), a receptionist, a hygienist and one other team member who did not disclose their role.

Williams Dental Practice was a semi-rural practice also offering a mixture of treatment types. It comprised seven members including: one principal dentist, three dental nurses, two hygienists and a receptionist. Five team members completed the pilot questionnaire (83%).

RBR Dental was a city centre based practice, also owned by IDH, offering a mixture of treatment types. It was made up of 12 team members: four dentists, five dental nurses, one hygienist, a receptionist and a practice manager. Of these, eight team members completed the pilot questionnaire (67%).

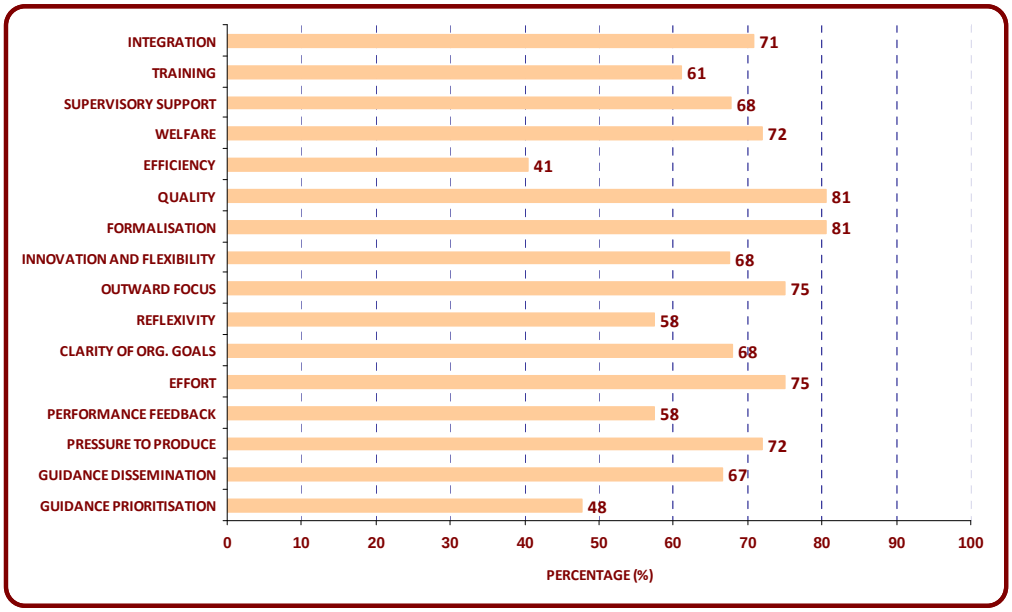
Jordan Dental Associates was a remote island dental practice and one of four salaried practices on the island, where there are no independent NHS providers at all. The team was made up of 15 team members. This comprised four salaried dentists (one of which is a special care dentist), eight dental nurses (two of which are extended duty dental nurses), two receptionists and one therapist. One of the dental nurses also undertakes the role of practice manager. Eleven team members completed the pilot questionnaire (73%).

RBR Dental preferred the researcher not to visit the practice and so team members fed back to the practice liaison, who participated in a telephone interview with the researcher. In McLaren Dental Care team members made themselves available over a lunch hour and the researcher ran an informal focus group. In the other two practices (Williams Dental Practice and Jordan Dental Associates), the researcher spent a day in the practice informally gathering feedback from team members who had completed the questionnaire on either a one-to-one basis or in small groups. In order to keep the sessions as informal as possible only handwritten notes were taken.

On analysis of the completed questionnaires it was apparent that questions relating to the dimensions of autonomy, involvement and tradition had been poorly answered with considerable missing data. As a result, these dimensions were removed for the analysis and were not reported back to the practices. Information gleaned during the feedback sessions identified that this was due to a lack of clarity around questions and so the questionnaire was revised.

Figures 8, 9, 10 and 11 show the DPOM scores for each practice. Definitions of each dimension can be found in the example practice feedback summary in Appendix 13.

Figure 8: McLaren Dental Practice Instrument Scores

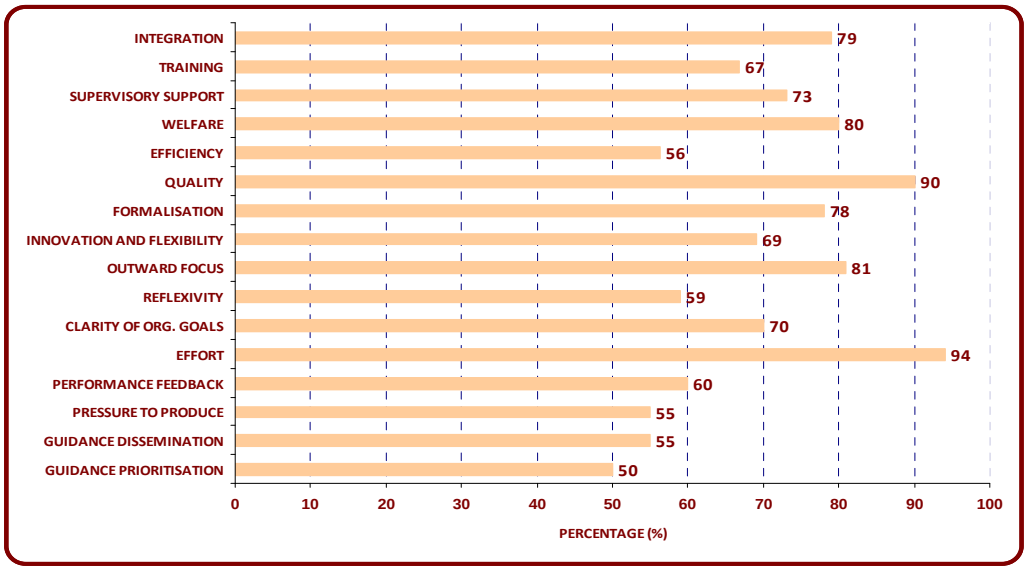


As illustrated in Figure 8, McLaren Dental Care scored highest in formalisation (81%), quality (81%), outward focus (75%) and effort (75%). These scores suggest that practice in question is responsive to the needs of patients, quality is of high importance and they work hard towards achieving this. Scores also suggested the importance of following practice rules and procedures. Team members scored the practice lowest in efficiency (41%), guidance prioritisation (48%), performance feedback (58%) and reflexivity (58%). This suggests that the team could be more efficient and productive, greater emphasis could be placed on measuring job performance and reviewing practice objectives and feeding this back to team members. Furthermore, how the team prioritise new guidance and recommendations could be improved upon.

These findings were supported by the researcher's observations from the practice. The practice is company owned and hence decision making occurs at a higher company level rather than at the practice level. Information is filtered to team members by a Practice Support Manager who undertakes a pivotal role as liaison between the company management and dental team members. This may explain the high level of importance placed on following practice rules and procedures, on the one hand, but the lack of emphasis placed on reviewing these at a practice level. Researcher observations also suggested that decision making in relation to the translation of guidance occurred at a company level

and, thus, this reinforced the lower scores for guidance prioritisation and reflexivity.

Figure 9: Williams Dental Practice Instrument Scores

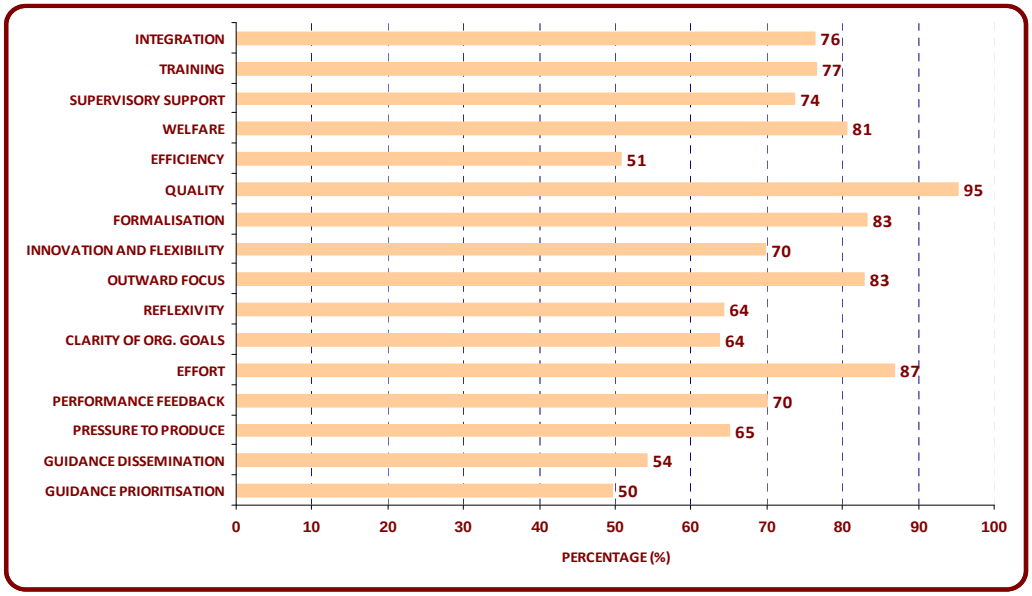


Team members from Williams Dental Practice (Figure 9) scored their practice highest in effort (94%), quality (90%) and outward focus (81%) and lowest in guidance prioritisation (50%), guidance dissemination (55%) and pressure to produce (55%). These findings were supported by the researcher's observations of this small, single-handed, family-owned and run practice. It was a friendly close knit practice, which came across as patient and employee focussed. Due to the small team and family atmosphere, there was a sense that employee welfare was of high importance (welfare also scored highly at 80%), and that the practice was keen to engage in training and research and to provide best practice dentistry. This is reflected in the higher scores for effort, quality, outward focus and welfare. This may also account for the lower score for 'pressure to produce' due to the relaxed atmosphere observed.

The lower scores suggest that the extent to which new guidance and recommendations are prioritised by team members and are communicated within the team, could be improved upon, and that team members may not feel a sense of urgency at work or feel under pressure to meet targets. They also scored lower in terms of efficiency (56%), suggesting a link between efficiency and pressure to produce, with a lower sense of urgency leading to a lower level

efficiency within the team. This highlighted an area to be explored in the full survey.

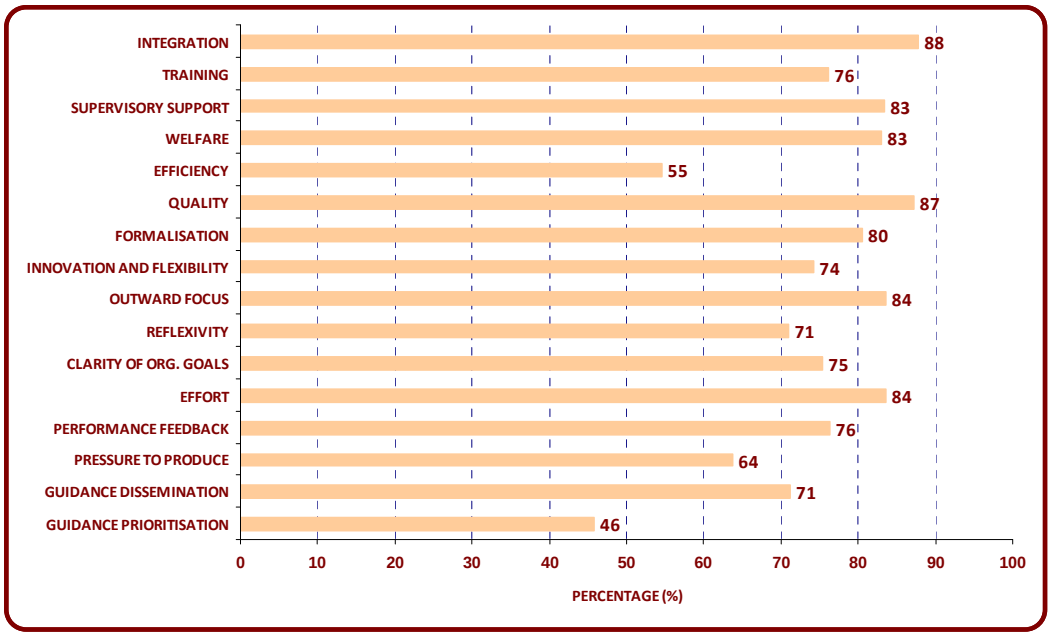
Figure 10: RBR Dental Instrument Scores



RBR Dental participants (Figure 10) scored the practice highest in quality (95%), effort (87%), formalisation (83%) and outward focus (83%). Like Williams Dental Practice, this suggests that team members give maximum effort, are willing to go out of their way and are enthusiastic about their work. RBR Dental also believe that they are responsive to the needs of the patient, provide high quality care, and rules and procedures are important within the practice. They scored the practice lowest in guidance prioritisation (50%), efficiency (51%) and guidance dissemination (54%), perhaps signposting some areas for potential development.

This practice preferred the researcher not to visit the practice to gather the feedback. Although the liaison dentist was open to the idea, the principal dentist was not. This made it impossible to compare the team members' reported scores with any observational data.

Figure 11: Jordan Dental Associates Instrument Scores



Finally, Jordan Dental Associates (Figure 11) scored highest in integration (88%), quality (87%), outward focus (84%) and effort (84%). Again there were obvious similarities with the other pilot practices in terms of giving maximum effort, being willing to go out of their way and enthusiasm about their work, being responsive to the needs of the patient and providing high quality care. Jordan Dental Associates was the highest scoring practice for integration, suggesting high levels of trust and co-operation between team members. The lowest scores were guidance prioritisation (46%), efficiency (55%) and pressure to produce (64%), again highlighting a potential association between pressure to produce and efficiency.

Jordan Dental Associates' scores were higher across almost half of the dimensions than the other pilot practices. This may reflect the different management structure in place in this practice given that it is a fully NHS salaried practice, which is one of four similar facilities on a remote Scottish Island. Team members advised the researcher during the feedback visit that monthly team meetings take place with members from the four facilities on the island with their Chief Administrative Dental Officer (CADO), considered to be the 'clinical lead' by the dentists. Within each practice a nominated person, often a senior dental nurse, acts as an administrative lead and is responsible for

implementing systems and procedures with guidance and decision making coming from the CADO. Jordan Dental Associates tended to score higher than the other practices in areas such as performance feedback and clarity of organisational goals, which may reflect their management systems and regular meetings.

On the whole, findings from the four practices completed questionnaires reinforced the observations made by the researcher during the feedback sessions. A range of feedback in relation to the content of the questionnaire and its completion was also received. In general, participants found the questionnaire easy to complete and times for completion ranged from 10 minutes to an hour. Most participants reported completing sections between patient appointments and hence found it hard to provide an exact time. No participants reported that it was overly onerous. The main area for improvement was in relation to the demographic questions concerning the dental team structure. Many participants reported being unsure how to complete certain questions because their practice structure did not include a principal dentist. This feedback on the practice structure also raised the issue of the differences that exist in terms of practice ownership. Thus, it was decided to include a question with respect to ownership in order to address this.

Suggestions were also made about how the questions in Section 1 of the questionnaire (the DPOM instrument) could be re-worded to make them relevant to the range of dental practice structures that exist in Scotland. This applied in particular to questions within the dimensions of autonomy, involvement and tradition, which had been poorly completed in the pilot. There was also considerable discussion regarding the scale used in Section 1 of the questionnaire (1-4: definitely false, mostly false, mostly true, definitely true). Some participants reported that they would have preferred a mid-point; however, since this did not appear to affect completion of the questionnaire, it was decided not to alter the scale, on this already validated instrument.

In terms of Section 2 (guidance compliance), few changes were suggested other than small modifications to the wording of the questions to be more in line

with the wording used in the SDCEP guidance recommendations. Some participants reported that they did not feel comfortable selecting the ‘don’t know’ option, even if this was not relevant to their role. A ‘not applicable’ option was included to address this.

Some suggestions for improvement were made in relation to the demographic questions in Section 3. Additional roles such as, trainee dental nurse, local decontamination unit operator and salaried dentist were suggested for inclusion, as was a question around practice ownership. In addition, it was highlighted that positioning the demographics questions at the start, rather than the end, might help participants think more clearly about how their team was structured and this might also facilitate completion of the other questions. Consequently, this was adopted and the sections were re-ordered.

Finally, significant feedback was received on how best to distribute the full survey in order to maximise response rates. Participants suggested further clarity on the confidentiality of the data, and it was suggested that information relating to confidentiality procedures be highlighted on the front cover of the questionnaire. In addition, it was felt that participants should be provided with individual freepost envelopes, rather than having to hand their completed questionnaires to the practice lead. It was also proposed that practices be sent a letter in advance of the full survey, giving them an opportunity to opt out, should they prefer not to receive the questionnaire. This would also give practices advanced notice, allowing them to make time available for team members to complete it. Interestingly, pilot participants suggested that one means of incentivising the study would be to provide continuing professional development (CPD) for participation. The researcher explored this option with NHS Education for Scotland and was able to make CPD hours available for those participating in the full survey as well as those who had participated in the pilot.

5.6 Summary, Implications and Reflections

This chapter has described the process carried out to develop a self-report dental team questionnaire to explore structure, culture and management in

dental practices in Scotland. The ten key concepts identified in the literature review and dental team interviews were defined in relation to the translation of guidance in dental practices, in order to identify the main areas to address in the questionnaire. An examination of the literature identified no one instrument to explore all the areas identified; therefore, the 'best fit' instrument was selected, which was the Organisational Climate Measure. This instrument had never been used in a primary care setting but as it covered eight of the ten concepts, it was accordingly modified to include questions to cover the remaining two concepts, and questions were re-worded so that the terminology was appropriate to the target population. Subsequently, a dental team questionnaire was developed, which incorporated a newly developed dental team specific instrument, The Dental Practice Organisation Measure. This was then piloted within dental practices.

The selection of the instrument was challenging particularly due to it not having been used in a similar setting; however, it was considered more appropriate to use an already validated instrument, with some modifications, rather than developing an entirely new one, given the advice received from experts.

The piloting process provided a unique opportunity to explore not only practical factors, such as the usability and clarity of the questionnaire, but also to assess whether the practice scores for the DPOM instrument matched the feedback and observations emerging from the practice visits and interviews. Findings from the pilot process identified a number of suggested revisions to the questionnaire, provided areas for further exploration in the full survey, and identified useful strategies to maximise dissemination methods and response rates in the full survey.

This survey was unique in that it relied upon more than one team member from each dental practice to complete the questionnaire. One of the most innovative outcomes was the introduction of a CPD incentive to participating practices. Taking the feedback received during this piloting process into consideration, the researcher revised the questionnaire and worked with NHS Education for

Scotland (NES) to allow participants to receive verifiable CPD hours, subject to the incorporation of an educational aspect to the study.

This is the first time that data has been collected from the whole dental team using a tool of this kind. In addition, it was the first time that CPD had been used as a means of encouraging dental practices to participate in a questionnaire based study. The process described in this chapter demonstrates not only the development and piloting of an instrument that can be used by dental practices to explore their structure, culture and management but also provides a mean of collecting this data through the use of verifiable CPD.

CHAPTER 6: DENTAL TEAM QUESTIONNAIRE

6.1 Introduction

As described in Chapter 1, uncertainty exists in relation to the impact that organisational characteristics may have on the translation of guidance within general dental practice. To the researcher's knowledge, these characteristics have never been explored using a multi-method approach within a dental setting. This study, therefore, provided a unique opportunity to use both qualitative and quantitative methods to explore the impact of dental organisational characteristics in relation to the translation of guidance.

Having described the development of the dental team questionnaire in Chapter 5, this chapter will describe the use of this questionnaire to explore organisational characteristics in relation to knowledge translation, in dental practices in Scotland. Chapter 7 will go on to describe in practice dental case studies and the integration of findings across both quantitative and qualitative approaches in order to answer the final research objective of this thesis. In order to answer the research question, guidance compliance is used as a measure of knowledge translation.

6.2 Aims and Objectives

The aim of the dental team questionnaire was to explore whether any of the organisational dimensions included within the Dental Practice Organisation Measure (DPOM) instrument or any practice demographic characteristics are associated with guidance compliance.

The primary outcome was:

- Are any of the DPOM dimensions associated with guideline compliance for the three guidance topic areas? (Emergency Dental Care, Oral Health Assessment and Review, Drug Prescribing)

The secondary outcomes were:

- Are any of the following practice demographics associated with guideline compliance?

- Having a Practice Manager
- Practice ownership (Independent; Corporate; Salaried Service)
- Existence of a computerised patient record system
- Treatment type offered (Fully NHS; Fully private; Mixture of treatment)

6.3 Methods

Design:

A cross-sectional survey using a dental team questionnaire to a random sample of practices in Scotland.

Setting and participants:

The questionnaire was sent to a random sample of 400 dental practices in Scotland. All team members within each dental practice were invited to participate. Questionnaires were distributed between April and July 2013.

Sample:

All practices providing general dental services with an NHS list number in Scotland were identified using the Practitioner Services Division's (PSD) Management Information Dental Accounting System (MIDAS) database[12]. The four practices that participated in the questionnaire pilot, as detailed in Chapter 5, were excluded. From this database a random sample of 400 dental practices was identified. This sample represents 40% of the total population of all primary dental practices in Scotland. One dentist from each practice was randomly selected to act as the practice contact.

Recruitment:

In response to feedback received during the questionnaire pilot and in line with evidence of how to increase postal questionnaire response rates[246], a pre-questionnaire letter was sent to the contact dentist in each practice two weeks prior to distribution of the questionnaire. This letter provided an overview of the study, advised that the practice would shortly receive questionnaires for all team members to complete and also gave practices the opportunity to opt out of the study if they wished. A copy of this letter can be found in Appendix 16.

Questionnaires were distributed to the sample of 400 dental practices in batches of 100. Based on a calculation of the average number of team members per practice, each practice was sent four questionnaires. The covering letter advised that dental teams made up of greater than four members could contact the researcher to request additional questionnaires. Questionnaires were distributed with a gap of approximately one week between mailings. This was to allow the researcher to assess distribution methods and gauge interim returns in order to ensure maximum response rates were achieved. A copy of the final questionnaire and information sheet can be found in Appendices 17 and 18 respectively.

For a practice to be included in the analysis at least one dentist, and one other member of the dental team (not a dentist), had to complete and return a questionnaire. This decision was made in order to allow the inclusion of dental practices made up of only one dentist and one dental nurse. Reminder letters were sent to all non-responding practices two weeks after the initial mailing. Where practices returned at least one questionnaire but did not meet the required quota of at least one dentist and one non dentist, personalised reminder letters, containing additional questionnaires were circulated and telephone reminders conducted.

Practices were encouraged to participate in the study by providing the opportunity for team members to receive two hours of verifiable Continuing Professional Development (CPD). All dentist must carry out at least 250 hours of CPD within a five-year period, 75 hours of which must be ‘verifiable’. Dental Care Professionals (DCPs) must carry out at least 150 hours, 50 of which require to be ‘verifiable’.

Following feedback during the pilot process, the researcher worked with the Postgraduate Dental Advisor at NHS Education for Scotland to develop an information pack with supporting tools to allow participation in the dental team questionnaire to be approved as a verifiable CPD Course. A condition of this process was that each participating practice was provided with an individualised practice feedback summary, following receipt of the team’s questionnaires. This

summary was identical to that used during the pilot process, a copy of which can be found in Appendix 13. To be accredited with the CPD hours, team members had to convene a meeting to discuss their practice findings, identify five action points and create an action plan for these points.

Data Collection:

Team members were asked to complete the questionnaire, and either, return it to the practice liaison, who was provided with a large freepost envelope for all practice returns, or to individually return it to the researcher in the freepost envelope provided.

Questionnaire Development:

Questionnaire development is described in detail in Chapter 5, a copy of the final questionnaire can be found in Appendix 17. The questionnaire comprised three sections; demographics for the participant and their practice (Section 1), the DPOM instrument (Section 2) and questions to determine compliance with recommendations contained within three dental guidance topics (Section 3). These were: Emergency Dental Care[9] (EDC), Oral Health Assessment and Review[10] (OHAR), and Drug Prescribing[11] (DP).

Data Analysis:

Data Management

Following the return of completed questionnaires, data was entered into a Microsoft Excel spreadsheet and 10% double entry was undertaken to check accuracy. Data was then exported into SPSS v20 which was used for the statistical analysis. Latterly SPSS v22 and Stata 13 were used. Thematic analysis[102] was used to analyse free text responses.

Missing Data

Missing data for the DPOM instrument scores were imputed using individual mean scores. Following advice provided by one of the developers of the original OCM instrument, cases were removed if greater than 25% of the instrument items were missing.

Creation of New Variables

New variables were created to reflect an overall mean score for each dimension contained in the DPOM instrument (e.g. autonomy, involvement etc.) In order to do this, some items had to be reverse scored. New variables were also created for compliance with the three guidance topics: 'Compliant' (Always=0) or 'Not compliant' (Sometimes, Never, Don't Know, Not Applicable =1). Two items within the Drug Prescribing section were reverse scored to ensure the compliant response always had the same value.

Finally, new demographic variables were created as follows:

- Practice manager (yes=1; no=0)
- Computerised patient record system (yes=1; no=0)
- Salaried Service (yes=1; no=0)
- Dental Body Corporate (yes=1; no=0)
- Independently owned (yes=1; no=0)
- Fully NHS (yes=1; no=0)
- Fully private (yes=1; no=0)
- Provides a mixture of treatments (yes=1; no=0)

Reliability

Reliability of the 19 scales (or dimensions) in the DPOM instrument were assessed using Cronbach's Alpha measure of internal consistency. The alpha co-efficient determines whether the items in each scale are consistently measuring the underlying concept by providing an average correlation between all the variables in that scale. Scores range between 0 and 1, with scores closer to 1 suggesting good internal reliability. Nunnally[247] suggests that alpha scores of 0.70 or above are acceptable and that scores below this level indicate that at least one variable is measuring a different concept and should be deleted from the scale.

Descriptive statistics

Descriptive statistics were used to explore the data, to check data distribution and ensure there were no disparities in data entry. Any data entry errors

identified were corrected by referring to the original data. Descriptive results are presented in full for demographic, dependent (outcome) and independent variables.

Statistical Analysis

Independent t-tests were used to assess differences in the instrument responses for participants reporting compliance with guidance recommendations compared to those who reported non-compliance. Chi-square tests, (or Fishers exact for low frequency observations) assessed any relationship between practice characteristics and compliance. Where appropriate, logistic regression models were used to assess the relationship between the DPOM instrument items, demographic variables and compliance with the three dental topic areas. Analyses were clustered by dental practice, using the Huber-White robust standard error procedure. Statistical significance was defined as p-value<0.05 and based on two-sided tests.

Visual inspection of histograms identified that some instrument measures appeared not to be normally distributed. However, examination of the values for the skew and kurtosis identified that only two dimensions, 'welfare' and 'quality', had a skewness statistic greater than one. (-1.1 and -1.6 respectively). Based on this, and given the sample size, the data was treated as approximately normally distributed.

6.4 Results

Response rates

In total 349 questionnaires were returned from team members across 96 practices, giving a practice response of 25%. Six practices contacted the researcher to opt out and three packs of questionnaires were returned. The number of questionnaires received from practices varied from two to sixteen.

Reliability

In order to explore the impact of each dimension on compliance with the three guidance topics, new variables were created to produce an overall mean score for each dimension. The internal reliability of each of these scales was

assessed using Cronbach's Alpha. Table 9 presents the overall mean score for each dimension, Standard Deviations and Cronbach's Alpha. Alpha's were broadly similar to the scores produced during the development of the original instrument. One of the newly added dimensions, 'Guidance Prioritisation' produced a negative alpha, suggesting problems with the scale. This was not entirely surprising given this scale within the revised instrument had not been validated in the same way as the original 17 dimensions. Based on these findings, two of the items were removed from the scale. The new scale, made up of three items produced an alpha of 0.60.

Table 9: Dimension Mean Scores for Dental Practice Organisation Measure (DPOM) Instrument
The response scale was: 1= 'Definitely False', 2 = 'Mostly False', 3 = 'Mostly True' and 4 = 'Definitely True'.

DIMENSION	Mean	SD	Cronbach's Alpha
Autonomy	2.71	0.55	0.69
Integration	3.39	0.56	0.80
Involvement	3.08	0.66	0.89
Training	3.14	0.66	0.81
Supervisory Support	3.29	0.57	0.91
Welfare	3.41	0.69	0.91
Efficiency	2.67	0.78	0.88
Tradition	2.25	0.62	0.77
Quality	3.70	0.43	0.82
Formalisation	3.41	0.52	0.75
Innovation and Flexibility	3.03	0.57	0.89
Outward Focus	3.34	0.49	0.75
Learning and Reflection	2.87	0.59	0.84
Clarity of Practice Goals	2.89	0.72	0.92
Effort	3.30	0.58	0.88
Performance Feedback	2.59	0.71	0.86
Pressure to Produce	2.26	0.51	0.66
Guidance Dissemination	3.12	0.65	0.79
Guidance Prioritisation (all five items)	2.37	0.41	-0.37
Guidance Prioritisation (items, c, d and e only)*	2.39	0.44	0.60

** Two of the items (questions a and b) were removed from the original scale.*

Descriptive Statistics

Demographics

Three hundred and forty-nine dental team members completed and returned the questionnaire. Four cases were removed prior to analysis due to missing

data in excess of 25%. The questionnaire was completed by a wide range of dental team members. This comprised Practice Owners (N=18); Principal Dentists (N=65), Associate Dentists (N=65), Salaried Dentists (N=6), Vocational Training Dentists (N=6); Vocational Trainer Dentists (N= 6) and Assistants (N=2); Dental Nurses (N=139), Extended Duty Dental Nurses (N=29), Trainee Dental Nurses (N=8); Practice Managers (N=20); Receptionists (N=56); LDU Operators (N=21), Dental Hygienists (N=14) and N=3 'Other' roles.

The majority of participants reported that their practice was independently owned (88%), the remaining were corporately owned (6%) or part of the salaried service (7%). Most reported that their practice offered a mixture of NHS and private treatment (77%), 22% were fully NHS and <1% were fully private. The majority reported having a computerised patient management system in their practice (82%) and just over half (56%) reported having a Practice Manager. Seventy-five per cent of participants, who reported not having a Practice Manager, reported that someone else within the team filled the role or undertook Practice Manager responsibilities.

The Dental Practice Organisation Measure (DPOM) Instrument

All participants were presented with questions in relation to all 19 dimensions contained within the DPOM. Respondents were asked to select one of four responses. Response categories were: 1='Definitely False', 2= 'Mostly False', 3= 'Mostly True' and 4= 'Definitely True'. Appendix 19 presents responses to all questions by percentage, along with means and standard deviations. Appendix 20 provides the definitions of each dimension.

At least 80% of respondents reported all statements within the dimensions of 'supervisory support', 'formalisation', 'welfare', 'effort' and 'quality' as either being definitely true or mostly true. In terms of 'quality', greater than 90% of respondents selected the more positive responses. Responses were, however, more varied in terms of the dimensions of 'efficiency' and 'tradition', 'clarity of practice goals' and performance feedback'.

Generally, respondents reported good ‘integration’ within their teams in relation to trust and co-operation between team members, and they reported high levels of support and understanding from their immediate supervisors in terms of ‘supervisory support’. In relation to ‘welfare’, they generally believed that those responsible within their practice, value and care for team members. However, in terms of involvement, 21% of participants responded that it is ‘mostly true’ that there can often be breakdowns in communication, and 20% said it was ‘mostly true’ that changes are made without discussion with the team members that would be affected. In addition, 12% reported that they definitely do not receive feedback on the quality of their work while 50% reported that it is ‘mostly true’ that it would be hard for someone to measure the quality of their own performance. Fifty-seven percent selected either ‘mostly false’ or ‘definitely’ false in terms of their performance being measured on a regular basis.

The data also indicates that ‘formalisation’ and ‘effort’ feature strongly within these practices with emphasis placed on formal rules and procedures and in relation to how hard people work towards achieving goals. Somewhat surprisingly respondents did not report particularly high levels of pressure to meet targets.

Participants reported to be generally up-to-date with new guidance (38% definitely true; 52% mostly true) and that senior team members make others aware of new guidance (38% definitely true; 49% mostly true). There were however, slightly lower levels of agreement in terms of having regular meetings to discuss new guidance (27% definitely true; 42% mostly true), and in particular, having meetings to discuss how to prioritise new guidance (14% definitely true; 44% mostly true).

Compliance with SDCEP Guidance Recommendations

Participants were presented with key recommendations from the three SDCEP guidance documents. They were asked to select one of five response options in order to determine compliance with specific recommendations contained in each document. The response options were: ‘Always’, ‘Sometimes’, ‘Never’, ‘Don’t Know’ or ‘Not Applicable’.

Participants were considered compliant if they reported to always following best practice for the recommendations for each guidance topic. In relation to EDC and OHAR, to be fully compliant, participants had to answer 'Always' for all questions. For full compliance with the DP recommendations, participants had to answer that they 'Always' treated the patient with local measures (Question a) and that they 'Never' prescribed a first or second line antibiotic to the patient in the first instance. Questions b and c were reverse scored to reflect this. Data was dichotomised in order to explore the characteristics of those reporting full compliance versus those not.

Compliance with the key recommendations from the three topics of guidance was variable. Full results are provided in Tables 10,11 and 12. Table 10 presents the percentage responses to each question. Table 11 presents individual participant compliance with each SDCEP guidance topic. Table 12 presents the practice characteristics of those participants who were fully compliant.

Generally, compliance with the EDC recommendations was reasonably high with 41% (N=141) of respondents reporting to be fully compliant and the vast majority reporting that there is a procedure followed for managing emergency appointment requests and there are arrangements in place for patients to receive care when the practice is closed (90% and 99% respectively). Fewer respondents reported that a clinician would always make contact with a patient within 60 minutes if the patient in question was complaining of dental trauma (53%) or facial swelling (51%). In relation to these results, the free text responses revealed that in some cases the patient concerned may be responsible for hindering compliance:

"…the only impediment to 60 minutes is the patients' availability. They are always seen as soon as possible"

Compliance with the OHAR recommendations was somewhat lower with only 19% (N=63) of respondents reporting full compliance. 85% reported that caries and restorations would always be recorded for all new patients; however, there

was more variability in relation to a head and neck assessment being recorded for all new patients, a risk based recall interval being assigned to all patients and a long term care plan being written. Twenty–four percent of respondents reported that a long term personal care plan is never written.

Compliance with the DP recommendations was low with only 4% (N=12) reporting to always following best practice. Twenty percent of respondents reported that a patient presenting with a dental abscess, with no obvious signs of spreading infection, would always be prescribed a first line antibiotic, and 65% said a first line antibiotic would sometimes be prescribed. In relation to prescribing second line antibiotics, 2% reported that they would always do this in the first instance, while 37% reported they would sometimes be prescribed.

An exploration of the demographic characteristics of the 12 respondents who reported full compliance with the DP recommendations, revealed they came from 8 practices. There were eight principal dentists (one of whom is also a practice owner), two associate dentists, a vocational trainee dentist, and a dental nurse, who also operates the LDU (Local Decontamination Unit). All eight practices were independently owned, offering a mixture of treatment types, four of the eight practices had a Practice Manager and seven of the eight practices had a computerised patient record system.

Free text responses in relation to drug prescribing behaviour were examined in order to explore this area further. When asked about their drug prescribing practice, and specifically what their antibiotic of choice and dosage would be for a patient presenting with a dental abscess (and no obvious signs of spreading infection), 193 of the 224 responses were either Amoxicillin 250mg or 500mg. Other antibiotics named were Metronidazole 200mg or 400mg or Penicillin 250mg or 500mg.

Table 10: Compliance with Key Guidance Recommendations
Based on valid responses and rounded to nearest %

EMERGENCY DENTAL CARE (EDC)	Always (%)	Sometimes (%)	Never (%)	Don't Know (%)	N/A (%)
If a patient contacts the practice…					
a. with a dental problem asking for emergency or unscheduled attention, there is a procedure that is followed	90	8	1	1	0
b. when it is closed there are arrangements in place for them to obtain care	99	1	0	0	0
c. complaining of dental trauma, a clinician will make contact with the patient within 60 minutes	53	35	4	7	1
d. complaining of facial swelling, a clinician will make contact with the patient within 60 minutes	51	38	4	6	1
ORAL HEALTH ASSESSMENT & REVIEW (OHAR)					
As part of a routine examination in this practice…					
a. a head and neck assessment is recorded for all **new** patients	45	27	15	9	5
b. caries and restorations are recorded for all **new** patients	85	11	1	1	3
c. a risk-based recall interval is assigned for **all** patients	62	22	6	6	5
d. a long term personal care plan is written for **all** patients	31	31	24	9	5
DRUG PRESCRIBING (DP)					
If a patient presents with a dental abscess, with no obvious signs of spreading infection, in the first instance…					
a. the patient is treated with local measures	55	35	0	6	5
b. the patient is prescribed a first line antibiotic	20	65	5	5	5
c. the patient is prescribed a second line antibiotic	2	37	42	14	5

Table 11: Full Compliance with SDCEP Guidance
Based on valid responses and rounded to nearest %

Guidance Topic	Compliant N (%)	Non-Compliant N (%)
Emergency Dental Care (EDC)	141 (41%)	200 (59%)
Oral Health Assessment & Review (OHAR)	63 (19%)	273 (81%)
Drug Prescribing	12 (4%)	317 (96%)

Table 12: Characteristics of Compliant Practices
Based on valid responses and rounded to nearest %

	Emergency Dental Care (n=141)	Oral Health Assessment & Review (n=63)	Drug Prescribing (n=12)
Has a Practice Manager	80 (57%)	45 (73%)	6 (50%)
Use a Computerised System	120 (85%)	56 (89%)	10 (83%)
Independently Owned	119 (84%)	56 (89%)	12 (100%)
Corporate Practice	8 (6%)	5 (8%)	0 (0%)
Salaried Service	14 (10%)	2 (3%)	0 (0%)
Fully NHS	32 (23%)	5 (8%)	0 (0%)
Fully Private	1 (<1%)	1 (2%)	0 (0%)
A Mixture of NHS/Private	108 (77%)	57 (90%)	12 (100%)

Statistical Analysis

Independent t-tests were used to assess any differences in instrument responses for participants reporting compliance with guidance recommendations compared to those who reported non-compliance. Full results are presented in Table 13. In relation to compliance with the EDC guidance, all dimensions with the exception of 'autonomy', 'tradition', 'pressure to produce' and 'guidance prioritisation' were statistically significant. ($p<0.01$ for all, except outward focus $p=0.01$). For these dimensions the results suggest that those fully compliant with the EDC recommendations scored significantly higher than those not fully compliant.

In relation to compliance with the OHAR guidance recommendations, the dimensions of 'guidance dissemination' ($p=0.03$); 'quality' ($p=0.02$); 'training' and 'tradition' ($p=0.01$) and 'formalisation', 'innovation and flexibility', 'outward focus', 'learning and reflection' 'effort' and 'clarity of goals'($p<0.01$) were statistically significant. These results suggest that, apart from 'tradition', in these dimensions, respondents reporting full compliance with the OHAR recommendations, scored significantly higher than those not fully compliant. In terms of tradition, the results suggest that those compliant, scored significantly lower than those not fully compliant.

This suggest that practices where team members have good dissemination systems in place in relation to guidance, focus on quality of care and are able to develop their skills, see the importance of formal rules and procedures, are open to change and innovative ways of working and responsive to the needs of

the patient, work hard with clearly defined goals and reflects upon the practice objectives are more likely to be compliance with the OHAR recommendations. It also suggests that where team members place too much emphasis on established ways of doing things they are less likely to be compliance.

For the DP recommendations, only 'pressure to produce' was significant ($p=0.04$), with those reporting full compliance, more likely to score lower for this dimension that those not fully compliant.

Chi-square tests (or Fishers exact for low frequency observations) revealed no significant relationship between the practice characteristic variables and compliance with EDC or DP recommendations. A positive association was observed between the OHAR guidance compliance and having a Practice Manager, $\chi^2(1, N=334) = 7.928$, $p<0.01$, and whether a practice was fully NHS, fully private or a mix, $\chi^2(2, N=335) = 10.049$, $p<0.01$. Full results are presented in Table 14.

Regression Analysis

The exploratory work described above, suggests a number possible associations between the organisational dimensions and guidance compliance. Although the chi-square tests revealed no association between practice characteristics and compliance with EDC or DP, they did suggest there may be a relationship between compliance with the OHAR recommendations and having a Practice Manager as well as the types of treatment a practice offers. Regression analysis was then undertaken to explore whether any of these factors could predict compliance.

Binary logistic regression was used to assess the relationship between the DPOM instrument items and compliance with the EDC and OHAR recommendations. Only 12 respondents were fully compliant with the Drug Prescribing recommendations. All were independently owned practices offering a mixture of NHS and private treatments, and hence, due to this lack of variation across variables, logistic regression was not appropriate.

Table 13: Dental Practice Organisation Measure (DPOM) Instrument Responses by Compliance

	Emergency Dental Care			Oral Health Assessment & Review			Drug Prescribing		
	Mean (SD)	t-value	p-value	Mean (SD)	t-value	p-value	Mean (SD)	t-value	p-value
Autonomy									
Compliant	2.67 (0.60)	-1.18	0.24	2.63 (0.50)	-1.33	0.18	2.77 (0.43)	0.38	0.70
Non-Compliant	2.74 (0.52)			2.74 (0.56)			2.70 (0.56)		
Integration									
Compliant	3.56 (0.46)	4.70	<0.01**	3.50 (0.51)	1.75	0.08	3.33 (0.45)	-0.32	0.75
Non-Compliant	3.28 (0.59)			3.37 (0.56)			3.39 (0.56)		
Involvement									
Compliant	3.33 (0.60)	3.08	<0.01**	3.11 (0.67)	0.38	0.70	3.23 (0.69)	0.85	0.40
Non-Compliant	3.00 (0.68)			3.07 (0.64)			3.07 (0.66)		
Training									
Compliant	3.29 (0.65)	3.43	<0.01**	3.32 (0.60)	2.53	0.01**	3.35 (0.29)	1.16	0.25
Non-Compliant	3.05 (0.63)			3.09 (0.66)			3.13 (0.66)		
Supervisor Support									
Compliant	3.44 (0.56)	4.03	<0.01**	3.34 (0.60)	0.75	0.46	3.25 (0.54)	0.20	0.85
Non-Complaint	3.19 (0.53)			3.28 (0.56)			3.28 (0.57)		
Welfare									
Compliant	3.55 (0.62)	3.06	<0.01**	3.40 (0.63)	-0.24	0.81	3.75 (0.45)	1.76	0.08
Non-Compliant	3.32 (0.71)			3.42 (0.70)			3.39 (0.57)		
Efficiency									
Compliant	2.84 (0.77)	3.31	<0.01**	2.72 (0.76)	0.58	0.56	2.52 (0.68)	-0.65	0.52
Non-Compliant	2.56 (0.77)			2.66 (0.78)			2.67 (0.79)		
Tradition									
Compliant	2.18 (0.58)	-1.65	0.10	2.09 (0.62)	-2.47	0.01**	2.33 (0.54)	0.43	0.67
Non-Compliant	2.29 (0.62)			2.30 (0.60)			2.26 (0.62)		

	Emergency Dental Care			Oral Health Assessment & Review			Drug Prescribing		
	Mean (SD)	t-value	p-value	Mean (SD)	t-value	p-value	Mean (SD)	t-value	p-value
Quality									
Compliant	3.78 (0.39)	2.71	<0.01**	3.82 (0.30)	2.38	0.02*	3.85 (0.32)	1.26	0.21
Non-Compliant	3.66 (0.44)			3.68 (0.45)			3.69 (0.44)		
Formalisation									
Compliant	3.78 (0.39)	3.32	<0.01**	3.58 (0.45)	3.08	<0.01**	3.47 (0.39)	0.45	0.66
Non-Compliant	3.66 (0.44)			3.36 (0.53)			3.40 (0.53)		
Innovation & Flexibility									
Compliant	3.20 (0.59)	4.55	<0.01**	3.20 (0.54)	2.86	<0.01**	2.92 (0.43)	-0.72	0.47
Non-Compliant	2.93 (0.53)			2.98 (0.57)			3.04 (0.58)		
Outward Focus									
Compliant	3.42 (0.44)	2.46	<0.01**	3.52 (0.36)	3.34	<0.01**	3.35 (0.51)	0.12	0.91
Non-Compliant	3.29 (0.51)			3.30 (0.51)			3.33 (0.50)		
Learning & Reflection									
Compliant	3.04 (0.62)	4.53	<0.01**	3.05 (0.56)	2.91	<0.01**	2.87 (0.49)	-0.07	0.95
Non-Compliant	2.75 (0.53)			2.82 (0.58)			2.88 (0.60)		
Clarity of Practice Goals									
Compliant	3.09 (0.72)	4.26	<0.01**	3.11 (0.76)	2.85	<0.01**	2.65 (0.54)	-1.26	0.21
Non-Compliant	2.76 (0.69)			2.83 (0.70)			2.91 (0.72)		
Effort									
Compliant	3.42 (0.60)	2.97	<0.01**	3.52 (0.52)	3.39	<0.01**	3.12 (0.43)	-1.12	0.26
Non-Compliant	3.23 (0.54)			3.25 (0.57)			3.31 (0.59)		
Performance Feedback									
Compliant	2.74 (0.74)	3.19	<0.01**	2.70 (0.80)	1.49	0.14	2.48 (0.79)	-0.50	0.62
Non-Compliant	2.49 (0.67)			2.55 (0.69)			2.59 (0.72)		
Pressure to Produce									
Compliant	2.23 (0.50)	-0.75	0.46	2.20 (0.48)	-0.94	0.35	1.97 (0.39)	-2.02	0.04*
Non-Compliant	2.27 (0.53)			2.27 (0.53)			2.27 (0.52)		

	Emergency Dental Care			Oral Health Assessment & Review			Drug Prescribing		
	Mean (SD)	t-value	p-value	Mean (SD)	t-value	p-value	Mean (SD)	t-value	p-value
Guidance Dissemination									
Compliant	3.24 (0.69)	2.83	<0.01**	3.27 (0.64)	2.16	0.03*	3.22 (0.67)	0.52	0.60
Non-Compliant	3.04 (0.59)			3.08 (0.64)			3.12 (0.65)		
Guidance Prioritisation									
Compliant	2.41 (0.43)	0.64	0.52	2.37 (0.46)	-0.39	0.70	2.28 (0.62)	-0.91	0.37
Non-Compliant	2.38 (0.43)			2.39 (0.43)			2.40 (0.44)		

**Significant at the 0.01 level
*Significant at the 0.05 level

Table 14: Practice Characteristics by Compliance

	Emergency Dental Care			Oral Health Assessment & Review			Drug Prescribing		
	x^2	df	p-value	x^2	df	p-value	x^2	df	p-value
Practice Manager (Yes/No)	0.06	1	0.80	7.93	1	<0.01**	0.26	1	0.61
Computerised Record System (Yes/No)	2.05	1	0.15	2.78	1	0.10	<0.01	1	0.95
Practice Ownership (Salaried/Corporate/Independent)	5.89	2	0.05	1.89	2	0.39	1.63	2	0.44
Treatment Type (Fully NHS/Fully Private/Mixture)	0.12	2	0.94	10.05	2	<0.01**	3.57	2	0.06

Regression results for compliance with EDC are presented in Table 15. With the exception of integration (Coef. 0.89; p=0.03; 95% CI 0.11 to 1.67) no other items were associated with compliance with the EDC recommendations. This suggests the more integrated a team is, i.e. effective team working and collaboration, the greater the probability they will comply. This is plausible given that EDC recommendations require involvement from a range of dental team members. Despite that, integration was not predictive in terms of compliance with the OHAR recommendations, which also require input from a range of team members. This raises the question of what it is about these two guidance topics that are different, given that both require involvement from clinical team members as well as those in reception and management roles. Interestingly, having a computerised patient management system was not statistically significant with EDC and OHAR compliance, which is surprising given the increased levels of administration required to comply with these recommendations. The results did however suggest there may be a positive association.

Regression results for OHAR compliance are presented in Table 16. Findings suggest that welfare (Coef. -0.88; p = <0.01; 95% CI -1.46 to -0.30), pressure to produce (Coef. -0.77; p=0.05; 95% CI -1.53 to -0.01) and guidance prioritisation (Coef. -0.97; p=0.04; 95% CI -1.91 to -0.03) are associated with compliance. This suggests that, the lower a practice scores in relation to ‘welfare’, i.e. the extent to which respondents feel the practice values and cares for team members, the greater the probability that they will be compliant. This is interesting given that you may expect team members reporting higher welfare scores to be more likely to comply with guidance. In terms of ‘pressure to produce’, the lower a practice scores for this dimension, i.e. practices where there is a slower pace of work, or less pressure to reach specific targets, the greater the probability they will be compliant with the OHAR recommendations. This again conforms with the previous findings in relation to team members having greater time to spend with patients and this influencing their ability to follow best practice recommendations. In relation to ‘guidance prioritisation’, the findings suggest that the lower the score for this dimension the greater the probability that they will comply with the OHAR recommendations.

Regression analysis also revealed that fully private practices are more likely to comply with the OHAR recommendations (Coef. 1.57; p=0.02; 95% CI 0.25 to 2.89) and fully NHS practices are less likely to comply (Coef. -1.36; p=0.04 95% CI -2.63 to -0.09) when compared to those offering a mixture of treatment. The chi–square tests also revealed an association between compliance with OHAR recommendations and the types of treatment a practice offers. These findings suggested that fully private practices are almost five times more likely to be compliant (Odds Ratio 4.81) while fully NHS practices are less likely to be compliant with the OHAR recommendations (Odds Ratio 0.26) than those offering a mixture of treatment types. This finding is consistent with qualitative findings described in Chapter 4, where interviews with team members working within a fully private setting, suggested that fully private practices often have more time to spend with patients and that private patients have higher expectations, expecting enhanced levels of care.

6.5 Discussion

The aim of this section of the thesis was to use the dental team questionnaire to determine whether any of the organisational dimensions contained within the DPOM instrument, or any practice demographics, were predictive of compliance with three topics of dental guidance. Compliance with the three areas of dental guidance was used as a measure of knowledge translation in order to answer the overarching study research question, which was to determine which organisational characteristics are most influential on knowledge translation.

Anticipated questionnaire response rates were based on previous questionnaire studies exploring dentists' compliance with guidelines, where response rates of around 40% were achieved[248,249]. However, in these studies the questionnaires were only exploring the views of the dentists rather than the whole dental team. To the researcher's knowledge, the views of the whole dental team have not previously been canvassed using a similar approach and hence 25% seems a reasonable practice level response.

Table 15: Emergency Dental Care Compliance Regression Results

[Pseudo R2 = 0.13]

	Co-efficient B	**SE**	***p***	**CI (95%)**
Practice Manager	0.18	0.27	0.52	-0.36 to 0.71
Computerised Record System	0.75	0.39	0.06	-0.20 to 1.51
Salaried Practice	1.11	0.66	0.09	-0.17 to 2.40
Corporate Practice	0.65	0.70	0.35	-0.72 to 2.02
Fully NHS	-0.18	0.37	0.62	-0.90 to 0.54
Fully Private	-0.04	0.45	0.93	-0.92 to 0.84
Autonomy	-0.34	0.31	0.28	-0.95 to 0.27
Integration	0.89	0.40	0.03*	0.11 to 1.67
Involvement	-0.12	0.41	0.76	-0.92 to 0.67
Training	-0.26	0.33	0.44	-0.90 to 0.40
Supervisory Support	0.37	0.33	0.26	-0.27 to 1.01
Welfare	0.31	0.31	0.32	-0.30 to 0.92
Efficiency	0.32	0.22	0.14	-0.11 to 0.75
Tradition	0.45	0.25	0.07	-0.04 to 0.94
Quality	-0.02	-0.51	0.96	-1.02 to 0.97
Formalisation	0.38	0.30	0.20	-0.21 to 0.96
Innovation and Flexibility	0.48	0.36	0.18	-0.22 to 1.19
Outward Focus	-0.47	0.36	0.19	-1.18 to 0.24
Learning and Reflection	0.49	0.42	0.26	-0.36 to 1.35
Clarity of Practice Goals	0.32	0.32	0.33	-0.31 to 0.95
Effort	-0.03	0.37	0.94	-0.76 to 0.70
Performance Feedback	-0.40	0.26	0.87	-0.55 to 0.46
Pressure to Produce	-0.18	0.29	0.53	-0.75 to 0.39
Guidance Dissemination	-0.54	0.32	0.09	-1.17 to 0.09
Guidance Prioritisation	0.17	0.33	0.60	-0.47 to 0.81

**Significant at the 0.01 level
* Significant at the 0.05 level

Table 16: Oral Health Assessment and Review Compliance Regression Results

[Pseudo R2 = 0.21]

	Co-efficient B	**SE**	***p***	**CI (95%)**
Practice Manager	0.58	0.47	0.22	-0.34 to 1.51
Computerised Record System	0.25	0.66	0.70	-1.05 to 1.55
Salaried Practice	-0.65	1.07	0.54	-2.74 to 1.44
Corporate Practice	0.62	0.82	0.45	0.10 to 2.22
Fully NHS	-1.36	0.65	0.04*	-2.63 to -0.09
Fully Private	1.57	0.67	0.02*	0.25 to 2.89
Autonomy	-0.33	0.31	0.27	-0.94 to 0.26
Integration	0.63	0.46	0.18	-0.28 to 1.50
Involvement	-0.50	0.38	0.20	-1.25 to 0.26
Training	0.54	0.45	0.24	-0.35 to 1.43
Supervisory Support	0.77	0.45	0.09	-1.65 to 0.12
Welfare	-0.88	0.29	<0.01**	-1.46 to -0.30
Efficiency	-0.37	0.24	0.13	-0.85 to 0.11
Tradition	-0.02	0.35	0.96	-0.70 to 0.67
Quality	0.12	0.81	0.90	-1.48 to 1.71
Formalisation	0.62	0.40	0.13	-0.17 to 1.41
Innovation and Flexibility	0.66	0.46	0.15	-0.24 to 1.56
Outward Focus	0.76	0.47	0.11	-0.17 to 1.69
Learning and Reflection	0.29	0.45	0.53	-0.60 to 1.18
Clarity of Practice Goals	0.17	0.40	0.67	-0.61 to 0.96
Effort	0.92	0.50	0.07	-0.07 to 1.90
Performance Feedback	0.10	0.30	0.73	-0.69 to 0.50
Pressure to Produce	-0.77	0.39	0.05*	-1.53 to -0.01
Guidance Dissemination	0.13	0.40	0.74	-0.65 to 0.91
Guidance Prioritisation	-0.97	0.50	0.04*	-1.91 to -0.03

**Significant at the 0.01 level
* Significant at the 0.05 level

A number of methods were used to maximise response rates including substantial pilot work and the innovative use of CPD accreditation. In addition, the approaches identified in Edwards et al.'s systematic review for increasing response rates to postal questionnaires were utilised. This included, naming individual dentists on all correspondence, sending questionnaires by first class post, providing free stamped addressed envelopes for returns and follow up mailings, conducting phone calls reminders and sending additional copies of the questionnaire where appropriate. Given the thoroughness of this process, it is likely that the maximum response rates possible were achieved.

The results identified that compliance with key recommendations from SDCEP's EDC, OHAR and DP guidance documents was variable. No practice reported full compliance with all three guidance topics. Overall, compliance with the three guidance topics was low with only 12 respondents (4%) reported full compliance with the Drug Prescribing recommendations.

Whilst these results are low, a number of caveats should be placed on this. For a respondent to be considered fully compliant they had to 'Always' report following recommended best practice. This was a very stringent criterion and to many of the questions a large proportion of respondents reported 'Sometimes' carrying out the appropriate behaviour. It was decided however, that for a respondent to be truly, fully compliant they had to perform the behaviour every time. There may of course be other factors that influence this behaviour and explain a 'Sometimes' response. Another factor, particularly in relation to the DP questions, was that a large proportion of respondents were non-prescribers (e.g. Dental Nurses, Practice Managers). Whilst some may have answered these questions based on what they think the dentists does, many responded with 'Don't Know' or 'Not applicable'.

Exploratory t-tests on a number of dimensions within the DPOM instrument revealed significant differences between the responses of those compliant with the EDC and OHAR recommendations and those who were not. For example, practices with good dissemination systems in place in relation to new guidance, that focus on quality of care, developing their skills, working hard with clearly defined goals, reflect upon the practice objectives, see the importance of formal rules and procedures, are open to change and innovative ways of working and are responsive to the needs of the patient, are more likely to be compliant with the OHAR recommendations than those who scored lower in these dimensions.

Results also suggested that a lower score for the dimension of 'pressure to produce' may be linked to full compliance with the DP recommendations, possibly suggesting that in practices where there is a slower pace of work, or less pressure to reach specific targets, dental professionals may be able to, or

have more time, to use local measures to treat patients rather than prescribing an antibiotic in the first instance. No enlightening information emerged from specifically looking at the free text responses of those 12 respondents who reported being fully compliant with the DP recommendations.

Chi-square tests revealed that there may be an association between compliance with OHAR recommendations and having a Practice Manager; however, the regression analysis did not support these findings. This association seems plausible nonetheless, given that implementation of the OHAR guidance requires input from not only clinical dental team members but also administrative staff. This relates to the organisation and management of paper work in order to produce long term personal care plans and in terms of managing and developing systems to facilitate the implementation of a risk based recall interval. Previous work, exploring the implementation of the OHAR guidance, has identified time and access to and use of appropriate software management systems as factors which are influential on the translation of these recommendations into practice[250].

Chi–square tests also revealed an association between compliance with OHAR recommendations and the types of treatment a practice offers. This was supported by the regression analysis with fully private practices being almost five times more likely to be compliant with the OHAR recommendations than those offering a mixture of treatment. However, this finding should be treated with caution given that less than 1% of practices in the sample reported being fully private. Results of the regression analysis indicate that ‘welfare’ ‘pressure to produce’, and ‘guidance prioritisation’ are also associated compliance with the OHAR recommendations.

In relation to ‘guidance prioritisation’, the findings suggest that the lower the score the more likely they were to comply with the OHAR recommendations. Regression results did not suggest any association between EDC compliance and guidance prioritisation and t-tests revealed no significant difference in responses from those reporting full compliance when compared with those non-

compliant with any of the three topic areas. ‘Guidance prioritisation’ was one of new scales added to the original OCM instrument. Reliability analysis revealed problems with this particular scale and as a result two items were removed. The Alpha produced even after removing these two items was relatively low (0.60), suggesting this finding should be considered with caution. Regression analysis also suggested that ‘integration’ may be associated with compliance with the EDC recommendations, suggesting that greater team working and collaboration may influence the translation of these recommendations.

6.6 Summary, Implications and Reflections

Overall the findings from this questionnaire highlight low compliance with the three topics of dental guidance. Although the results do reveal some plausible findings in relation to the organisational characteristics which may influential on the translation of EDC and OHAR recommendations, the low levels of compliance and lack of variability made it difficult to explore compliance with the DP recommendations. In addition, the findings did not identify any characteristics likely to influence guidance compliance across topics.

Full consideration of the limitations of the questionnaire findings are discussed in Chapter 8; however, results should be viewed carefully given the lack of variability in the data. In addition, due to the low practice level response, analysis was conducted at the individual level rather than the practice level. For the regression analysis however, data was clustered by the practice ID variable, to control for any practice level characteristics that might influence the result. Analysis of the questionnaire results by professional role did not form part of this study’s objectives, however this may be an area for further exploration in order to explore the impact of professional role on guideline compliance.

The next stage of this study was to conduct case studies to further explore the impact of these organisational characteristics on the translation of guidance.

CHAPTER 7: DENTAL PRACTICE CASE STUDIES AND INTEGRATION OF FINDINGS

7.1 Introduction

Chapter 6 described the process of using a dental team questionnaire to determine which organisational characteristics are associated with compliance with three specific areas of dental guidance. Chapter 7 describes in depth dental practice case studies to explore how these organisational characteristics may influence the translation of guidance.

Case study methodology is driven by the need to examine and gain insight into complex healthcare systems[251]. It is particularly useful when trying to obtain a more in-depth appreciation of an issue, event or phenomenon of interest in its natural context[252] and in particular has been used in health services research to explore the implementation of specific health legislation, policies and programs[251]. One of the key features of case study methodology is its intense focus on a single phenomenon within its real life context, something which is difficult to explore using survey design alone. It is therefore, an appropriate means of both exploring the questionnaire findings in greater detail and examining the context into which guidance is being implemented. The findings of both phases will then be integrated to identify similarities and differences across study findings in order to generate a greater understanding of the influence that organisational characteristics may have on knowledge translation.

7.2 Aims and Objectives

The aim of the case studies was to explore the organisational characteristics that are influential on the translation of guidance in practice. The specific objective of the interviews and observations was to study the practice environment, practice systems, communication and team member interactions, in order to identify the key barriers and facilitators to implementing new guidance and recommendations, with a view to understanding which characteristics are most influential in which situations.

7.3 Methods

Design:

The dental practice case studies were comprised of face-to-face and telephone interviews, in practice and contextual observations, and where available, documentary analysis. A collective case study approach was undertaken. This involves studying two or more cases simultaneously in order to generate a broader appreciation of a particular issue[252].

Setting and Participants:

Dental practices were selected from those who participated in the dental team questionnaire. All practices, where at least one dentist and one non dentist completed the questionnaire, were eligible for case study participation. Case studies took place in October 2013.

Recruitment:

Following completion of the questionnaire, all eligible practices were identified and a pragmatic approach to case study selection was taken, initially focusing on practices that had indicated a willingness to participate in research, through the Scottish Dental Practice Based Research Network (SDPBRN). Invitation letters were sent to all interested practices (N=5) and the researcher arranged to telephone the practice to discuss the study in greater depth. If the practice agreed to participate, the researcher arranged a convenient date to visit the practice and sent the practice a full study pack so that all team members were appropriately briefed ahead of the day.

Data Collection:

The researcher spent one full day in each case study practice. All team members were invited to take part in an interview. A semi-structured interview schedule was developed to explore in greater detail the findings from the questionnaire data and was informed by the questionnaire findings as well as previous experience of in practice observations. In addition, formal and informal observations were undertaken. Formal observations took place at specific time

points during practice hours, which involved greater whole team interaction (first hour of the day, lunchtime, last hour of the day). The observational guide was informed by the practice visits undertaken during the questionnaire piloting stage and through discussions with dental care professionals working in general dental practice. Other relevant hand written field notes were taken at any time between interviews and included recording the presence of guidance documents, written protocols, technologies, forms of communication used, record of meetings amongst others. In addition, the researcher spent some time exploring the area surrounding the practice in order to gather a good understanding of the practice context including the general environment and patient profile. A copy of the Interview Schedule and Observation Guide can be found in Appendix 21. All interviews were recorded and transcribed in full. Observational field notes were written up in full as soon as possible after the practice visit.

Analysis:

As per the earlier study interviews, interview transcripts and observational field notes were analysed using the framework approach[207]. As described in Chapter 4, the Framework approach is a practical five stage process, considered suitable for analysing large complex data as is commonly collected when using case study methodology[252]. Analysis was facilitated through the use of QSR Nvivo 9 software which allowed interview data and field notes to be integrated in one database.

A similar process to that used when analysing the earlier study interviews was followed (see Chapter 4 where this is described in full). An initial familiarisation of interview transcripts, observational field notes and the practice questionnaire findings was carried out. This allowed the researcher an opportunity to record some initial thoughts and recurrent themes.

The Knowledge Translation in Primary Care framework was again used as an initial coding framework to facilitate the indexing process. Interviews, observations and organisational instrument measures were initially analysed

individually to identify any key themes. Data from each case study practice was then considered independently to allow themes to be identified at a practice level. Throughout this process reference was continually made back to the framework developed from the literature review, to ensure items were being coded consistently. Finally, themes were considered across cases to explore similarities and differences. Overarching themes were then identified as being most relevant in terms of the organisational characteristics most influential on the translation of guidance.

Integration of Questionnaire and Case Study Data

Key findings from the survey and the case studies were integrated using a cross comparison method which involved identifying similarities and differences across the data. This was broadly based on the approach advocated by Creswell of using qualitative findings as a means to explain quantitative results[253]. The use of a visual joint display was also used to present the integrated findings.

7.4 Results

Participants from across 96 dental practices completed the dental team questionnaire. Of those 96 practices, 77 practices were eligible for participation in the case studies. In the first instance, invitation letters were sent to five practices, and of these, two agreed to participate. This was a lower number than originally planned. The three practices that did not participate cited time pressures as the reason.

The researcher spent a full day in each practice and conducted eight interviews in total either face-to-face or over the phone if team members were not available on the day of the practice visit. For the purposes of reporting, the two case study practices and all team members referred to have been given fictitious names: (1) Hamilton Dental Care and (2) Rossi Dental.

Case study findings, by practice, are summarised in Figure 12 below.

Figure 12: Summary of Case Study Findings

HAMILTON DENTAL CARE

Demographics/Characteristics:
- NHS treatment only
- 1 Dentist (p/t), 1 Dental Nurse (p/t)
- Paper patient record system and appointment book
- Urban area
- Independently owned

Compliance with SDCEP Guidance:
- Not fully compliant with any of the 3 dental topic areas covered in the questionnaire

DPOM Scores:
- Scored highest in quality, welfare & integration
- Scored lowest in guidance prioritisation & pressure to produce

Key Organisational Barriers/ Facilitators to the implementation of Guidance:
- Context - patient profile; practice context (size geographical location; ownership; restricted opening hours)
- Leadership – strong leadership from practice owner.
- Relationships - within the team/with patients
- Tailoring to meet their patient profile
- Support for training
- Reluctance to change systems

ROSSI DENTAL

Demographics/Characteristics:
- Mixture of NHS and Private treatment
- 2 Dentists, 3 Dental Nurses (1 p/t), 1 Hygienist (p/t), 1 Receptionist, 1 Practice Manager (p/t)
- Computerised record and appointment system
- Rural area
- Corporate practice

Compliance with SDCEP Guidance:
- Not fully compliant with any of the 3 dental topic areas covered in the questionnaire

DPOM Scores:
- Scored highest in quality, effort & formalisation
- Scored lowest in guidance prioritisation, tradition & performance feedback

Key Organisational Barriers/ Facilitators to the implementation of Guidance:
- Leadership – remote/unclear
- Context - patient profile (close knit community); practice context – geographical location; corporate ownership
- Barriers to training
- Passive attitude of team members
- Poor communication
- Lack of feedback to team members

Findings from each case study practice are initially presented separately under three headings as detailed below. An overall summary then presents a cross-case comparison, identifying the main similarities and differences.

(1) Practice setting, environment and characteristics
(2) Organisational instrument measure and guidance compliance
(3) Organisational barriers and facilitators to the translation of guidance

Hamilton Dental Care

(1) Practice setting, environment and characteristics

Hamilton Dental Care is a small independently owned dental practice in a small town on the outskirts of Glasgow with a list size of approximately 2,500. The dental team is made up of one dentist (the practice owner), who works one four-hour session per day, and a part time dental nurse/receptionist. The dental nurse is a trained Childsmile nurse and the dentist also works at the Glasgow Dental Hospital. Childsmile dental nurses are specifically trained to provide extended duties focussing on preventive treatment for children. An example of this is the application of fluoride varnish. The practice treat NHS patients only and use a paper based patient record system, although they do have a computer which is used to automate text message appointment reminders for patients. Both team members participated in interviews during the practice visit.

The practice itself is based on a busy road in the centre of the town. It is a basement premises, accessed by steep steps and cannot be seen from the road. There was no disabled access but the dentist mentioned making home visits to patients when necessary. The exterior of the property was not particularly welcoming and the immediate area appeared quite deprived. The dentist described the patient profile as predominately alcohol and drug addicts with a large proportion of asylum seekers.

The interior of the practice was small with one surgery, one Local Decontamination Unit (LDU), a toilet/shower room, a small stock room and a

reception area and waiting room. In general, the interior was clean and modern with very little patient information or products displayed. Practice opening times were displayed on the front door, but there was no sign of a patient leaflet or any other patient information on arrival. The reception area was quite chaotic with an entire wall displaying patient records and folders stuffed in cardboard boxes lying on the floor. There was limited information displayed in the waiting room/reception area in terms of practice policies, pricing information or other locally relevant information about dental or other health related care. The LDU was quite untidy with foodstuffs lying around and tea/coffee making equipment placed alongside trays of dirty equipment brought through from the surgery.

(2) Organisational instrument measure and guidance compliance

Analysis of team member's questionnaire results revealed that Hamilton Dental Care scored highest in quality, welfare and integration and lowest in guidance prioritisation and pressure to produce. This suggests that the team places a great deal of emphasis on the quality of care they provide to their patients, there is a high level of trust and co-operation between team members and team members feel valued and cared for. It also indicates that team members do not feel under pressure whilst at work and they place less emphasis on the prioritisation of new guidance and recommendations. Hamilton Dental Care was not fully compliant with any of the three dental guidance areas explored in the questionnaire.

(3) Organisational barriers and facilitators to the translation of guidance

In terms of leadership, this role was clearly taken by the dentist and practice owner. Team work, however, was evident between the dentist and dental nurse, with each having clear roles and responsibilities as suggested in the following:

"I mean Nadine's kind of in charge of all the decontamination processes. I'm more in charge of dealing with the patients and I'm the one more like that chats to them while Nadine's getting the stuff organised" **Participant 15 (Dentist).**

The dental nurse spoke about how she comes in earlier than the dentist to ensure all the sterilisation is done and that everything is set up for the day. This

included getting copies of paper patient records out in advance and having all the payment paperwork organised in advance of patients arriving. The dentist described getting the practice ready for inspection, which she clearly saw as her responsibility:

"I'm getting ready for this practice inspection so it's down to me to get all these protocols and so on in place" **Participant 15 (Dentist).**

As you would expect in such a small practice, the dentist and dental nurse appeared to have a close relationship and the dentist also clearly cared about the wellbeing and working conditions of the dental nurse.

"You know, I'm bothered about Nadine and what she thinks and our working environment. And I'm also bothered about the patients and how they feel about coming in here and the environment that's going on." **Participant 15 (Dentist).**

Interaction between the dentist and dental nurse was observed by the researcher. They appeared to have a close trusting relationship, always seeming to know what the other was doing and following an established routine. There was relaxed chatting between them during the day; however, it was highlighted during the course of the interviews that although they have a good working relationship, they do not socialise outside of work.

The downside of working in a team of two, nevertheless, was also highlighted. This was in relation to who they could speak to if there were ever any issues between them and in relation to formalising procedures. It was reported that the process of getting the practice ready for inspection, had resulted in some formal processes having to be implemented, which included, the dental nurse's contract of employment, introducing appraisals and providing performance feedback. The dentist reported finding this awkward:

"I think in a small practice it can be sometimes hard if you do want to change something to address it with just one other person. I mean recently again I said to Nadine, "With all this practice inspection I'm going to have to hit you with a contract of employment...And I looked through one of my colleague's contracts of employment that he gives to all his dental nurses. And it was really…I don't know, it just seems really harsh and really obnoxious. And I said, "Look," well I

said to Nadine, "Look, I'm going to have to give you one of these but don't worry, this is not what … it's just I've got to give you a contract of employment and I would never hold you to…" **Participant 15 (Dentist).**

She added:

"I mean I've got these appraisal sheets and I know I should and I know, you know. Again, I think she would be embarrassed and I think I would be embarrassed because there's just the two of us." **Participant 15 (Dentist).**

In terms of communication, the researcher received prompt and helpful communication ahead of the practice visit from the dentist as the practice was well prepared and the dental nurse appeared well briefed. On the day in question, both the dentist and dental nurse were friendly and welcoming. Within the team, communication was reported as being informal and predominantly face-to-face, but both team members mentioned leaving post-it notes for each other when necessary and 'scrawling in the book'.

The dentist had a relaxed manner with patients and spent a considerable amount of time chatting informally and reassuring any who appeared anxious. The greeting of patients when they arrived at the surgery was a bit haphazard, mainly because often both team members were in surgery. On some occasions patients were not greeted at all, and in one instance, the dentist came out to greet a patient whilst eating a yoghurt. Often the dental nurse was busy in the surgery and hence could not leave to greet patients or answer the telephone. All of which highlights the challenges of working in a small team.

Another challenge related to being a small team was not having interaction with other professional colleagues. The dentist raised the issue of not having other dentists to refer to for advice around clinical decision-making and managing difficult situations. She described a recent example of a patient with learning difficulties and needing advice on how best to manage the situation. Nonetheless, she highlighted that her time spent working at the dental hospital was invaluable as her colleagues there provided crucial support.

"In the first instance I would chat to my colleagues at the dental hospital. That's partly why I started to work there, because I'm a single-handed practitioner." **Participant 15 (Dentist).**

Despite acknowledging this downside of lone working, there was a reluctance to change current ways of working to include other team members:

"I mean we've not really got the room for another dentist in here. I suppose I could get somebody in working the hours that I don't work but that in terms of administration and management and you know. I mean you hear so much, I mean from my colleagues, I hear so much about what goes wrong in associate-ships and people falling out with their partners and so on. And I just think, you know, here I've got the say in how things are done and what gets ordered and you know what hours we work. And that suits me." **Participant 15 (Dentist).**

In addition to good relationships within the team, team members in Hamilton Dental Practice also appeared to have good relationships with their patients. Having owned the practice for 17 years, the dentist referred to treating some patients as children, adults and now treating their children and how she enjoyed this aspect of running a practice. These relationships which were also observed during the practice visit, appeared to form a strong part of the organisational culture that exists within this practice.

"You treat them as a child, you treat them as an adult, you learn to deal with them differently, in a different sort of way. And you develop relationships with people. That's the thing I like the best about practice, whereas in the dental hospital you don't really build up a relationship with anybody except your colleagues obviously." **Participant 15 (Dentist).**

Despite, working well together with clear working systems, these processes were very much informal. It was reported that no appraisal or formal feedback system exists, they never have formal practice meetings and the dental nurse had not had a contract of employment for over a year. It was clear from the interviews that only due to an imminent practice inspection, were some of their working practices being formalised.

"*We sit down all the time and we call it practice meetings for the protocol. But you know, it's just as easy to stray on to what we did at the weekend."* **Participant 15 (Dentist).**

When asked about formal feedback and appraisal the dental nurse said:

"No. Gayle always says, "You're doing a good job," that kind of thing, but just informal." **Participant 16 (Dental Nurse).**

"Again I mean it's actually, you know, I'm telling you the truth here. If you were the Health Board… whenever they come to do my practice inspection in January. I'm going to have all these filled in appraisals with Nadine. We're going to have to do one sometime, so you know." **Participant 15 (Dentist).**

On the day there were only a small number of appointments scheduled (this may have been because of the planned practice visit), however, inspection of the paper appointment book revealed very few scheduled appointments for the coming days and indeed weeks. The dental nurse advised that patients phoning on a Monday for an appointment would be given one within two to three days. As part of the interviews, the way in which the practice manages appointments and the types of systems they have in place, were discussed. These discussions and observations proved enlightening in relation to this practice's organisational characteristics and provided a unique insight into how this impacts their ability to implement guidance in every day practice. At one point during the interviews, the dentist made it clear she did not like to work in a high pressure environment commenting:

"We do our very best to make sure that we've not got 100 patients turning up at the one time. I hate that in a practice. And I've made sure that my practice doesn't run like that, that we do have time that people don't feel…Now occasionally it happens, this of course will be the day that a bus full of patients will arrive first thing and then nobody will come for the rest of the afternoon. And that can happen and there is nothing you can do to stop people not coming at their appointment time." **Participant 15 (Dentist).**

It was noted that although there is not a computerised patient management system in place, the existing computer can automatically generate text messages to remind patients to make a six monthly check-up appointment. The practice then relies upon the patient phoning to arrange an appointment. Despite the dentist advising the researcher that the practice was part of an HTA (Health Technology Assessment) trial exploring the benefits of different recall

intervals, it was noted that only a six-month recall period was referred to, with no mention of the recall interval being risk based. When asked if they would ever automatically make appointments with patients at the end of each appointment, the dentist advised she would never do this, commenting:

"We've had to do that for the interval study but it hasn't worked very well. They always want to change it." **Participant 15 (Dentist).**

The dental nurse advised that in addition to their standard procedure for arranging appointments, she may on occasion use alternate methods to contact patients, particularly friends and family:

"Well … I've got a few patients that are friends of mine that come here so I'll send a text message to somebody or I'll Facebook so and so." **Participant 16 (Dental Nurse).**

In relation to emergency care, the dentist reported leaving gaps each day to accommodate unscheduled appointments and said she would always try to accommodate them. The dentist made the following remark, alluding to prescribing antibiotics due to time constraints:

"If we didn't have a gap well we would try and fit them in even if it's just … I think if somebody knows at least … is being seen it reassures them. Even if it's just a prescription, if you're absolutely mobbed it's just a prescription and an X-ray and you know what they're coming back for." **Participant 15 (Dentist).**

During the day there was a relaxed atmosphere and no sense of urgency, with considerable time spent over appointments and large gaps between patients. This observation was in keeping with the low 'pressure to produce' score from the practice's questionnaire data and the dentist's interview comments. Indeed, when an elderly gentleman who had missed an appointment due to being in hospital phoned, he was slotted in that afternoon with the dentist commenting that it is good to see him while they can. In addition, when patients popped in to make appointments during the day, the dentist asked them if they were willing to wait for a few minutes, and then just saw them when she had a gap. She explained that due to the chaotic lifestyles of a number of these patients, they

may not turn up for scheduled appointments, and so she takes the opportunity to see them while they are in. She explained that this is how they have to manage the appointment book, based on their patient profile: otherwise a number of these patients would not be seen at all.

"But right at the back of here there are quite deprived areas. I've got a lot of patients that basically nobody else wants; alcoholics, drug addicts and people with very, very chaotic lives. And it is difficult to treat people with chaotic lives." **Participant 15 (Dentist).**

Despite this system, all patients with scheduled appointments that day were seen on time or early. It also became clear during the course of the day that due to the patient profile, whilst another more 'standard' patient management system, might facilitate the translation of guidance, this might not be the best method of enhancing patient care in this particular demographic.

Having tailored their systems to fit the context within which they were working, it was, nevertheless, evident that there were still barriers to the dental team following best practice guidance. It was reported that if patients do make appointments in advance, they often cancel them or fail to turn up. In addition, the dentist highlighted difficulties in treating children with fluoride varnish as the parents fail to bring them to the surgery every three months. Even if she does manage to apply the fluoride varnish, the dentist commented that some parents believe that their children's diet and oral hygiene is not important:

"I never cease to be amazed by somebody who comes in with their four-year-old with four or five rotten teeth and they say, "He's had the fluoride varnish and everything." And I'll look at the notes and the last time they were in was 18 months ago and they got fluoride varnish then. You know, they think one application of fluoride varnish is enough so that your child can eat what they like and not brush their teeth." **Participant 15 (Dentist).**

In addition to the challenges of getting patients to the practice to be seen and treated, it was also observed that there might be significant patient barriers impacting on the translation of guidance. In some cases, when asked to check patient history forms, patients looked at them blankly, possibly due to literacy problems, and one patient asked his girlfriend to write down his mobile number

for the patient record. One young boy was observed trying to steal stationery from the reception area and the dentist advised that he had recently had a large number of his teeth extracted in hospital under general anaesthetic. Despite dealing with this challenging and complex patient population, the dentist revealed, however, that the interesting patients are what she enjoys most about her job, even although she does much more interesting clinical work at the dental hospital.

In terms of following guidance recommendations, it was clear that although Hamilton Dental Care are aware of guidance, they do 'cherry pick' from it and determine whether or not it is appropriate to their practice context. Significantly, the dentist reported that she does not enquire about smoking and drinking as she does not think it is any of her business or part of her role. Both team members mentioned having received in-practice decontamination training and mentioned how useful this was; however, they reported that placing dirty instruments in plastic boxes was not relevant in their practice as there were only 3 steps between the surgery and the LDU:

"But the guidelines are that you take your dirty instruments in a plastic container with a lid on it. These three steps between the surgery and the sit down area, you know. And really why would you get gunk on your wee plastic container? Yet another thing to clean. Why not just carry them in the tray for that three steps? And the thing is that of course in most practices they are bigger and you can see why these guidelines are in place. Nobody wants dirty instruments falling on the floor. But they're just as likely to fall on the floor as Nadine's putting them into the plastic box. So these are the kind of things that we have to say we do them in protocols but in reality we don't really do them." **Participant 15 (Dentist).**

The dentist was also overheard discussing decontamination processes with patients commenting how previous processes "didn't cause us any harm". The team did, however, report making one change to their procedure following the in-practice training. This was a re-positioning of the sharps bin from one side of the surgery to the other so that it was next to the dentist and would encourage her to dispose of needles rather than handing them to the dental nurse. This appeared to have been easily implemented.

In terms of training and development, it was apparent that the dentist considered herself very active in training and research and was involved with a number of dental research trials and studies. She appeared very encouraging of her dental nurse undertaking relevant training, highlighting potential courses and allowing her to attend at no cost as part of her working day. On the day of the practice visit, a course flyer was delivered and the dentist immediately brought it to the dental nurse's attention. The nurse also advised that she is a trained Childsmile nurse but commented that she does not actually use this training and still works under the dentist's supervision at all times.

The organisational characteristics of Hamilton Dental Care were in some ways contradictory. Whilst forward thinking in terms of training and research, when discussing their forthcoming practice inspection, the dentist inferred that it was a bit of a 'tick box exercise'. The practice context appeared quite old fashioned in terms of using a paper patient record system and files as well as a paper record appointment book, and there appeared to be a reluctance to change or modernise. This came across in terms of both following new guidance recommendations and also in terms of practice systems and ways of working. The dentist mentioned using the R4 software for recording patient records at the dental hospital but reported that *"I don't really think that it's of any benefit really at all."* When asked about whether computer software would be beneficial, the dental nurse was of a similar opinion, commenting, *"No, I like the way it is...."*

In addition, despite the practice only being open one session per day the dentist was not keen to take on an associate or partner. Furthermore, having undergone Childsmile training, the dental nurse was not actively utilising this, which could result in her feeling deskilled. On the whole, however, organisation was good and the team clearly cared about their patients. This was illustrated by them giving out samples of toothbrushes, toothpaste and mouthwashes to patients as soon as they were delivered. The dentist also recalled that when on maternity leave as she had no one to cover for her, she returned to work after

three weeks, for a few hours each day so that she could see emergency cases, illustrating her commitment to her practice and her patients.

Rossi Dental

(1) Practice setting, environment and characteristics

Rossi Dental is a corporate dental practice owned by Independent Dental Holdings (IDH), a large dental corporate company, who own a network of dental practices throughout Europe. The practice is made up of eight team members: two full time dentists, three dental nurses (one part-time), a receptionist, a hygienist who works only on a Saturday, and a Practice Manager who is shared between two practices. The practice offers a mixture of NHS and private treatment, although the hygienist is fully private. They use the computer system R4 to manage their patient records.

Unfortunately, the hygienist was unavailable to participate in the case study interviews and the Practice Manager declined to participate. The researcher did manage to speak to the Practice Manager informally on the telephone, in order to determine her reasons for this. She was completely opposed to the practice having taken part in the case study and expressed the view that higher approval should have been sought from IDH.

The practice is set is a rural town in the Scottish Borders. Although the town itself is relatively small, the practice covers a large and widespread surrounding area, with many patients travelling some distance to be seen and having little option about which dental practice they attend. The practice was located in a small building on a side street just off the town's main thoroughfare. The downstairs was comprised of two surgeries, an open plan reception and waiting area, and a small cloakroom with a kettle and space for staff to store coats and bags, while upstairs housed a Local Decontamination Unit (LDU), a small staff room, a stock room, an office and a toilet.

On arrival at Rossi Dental, it was obvious that this was a corporately owned practice with many corporate posters evident. Information was also observed concerning opening hours and the dentists' names were clearly displayed on the front door. In the waiting room, a selection of magazines, children's books and other healthcare related leaflets, were available. A detailed price guide for private treatment was also displayed. Examples of other posters displayed on the walls included: the code of practice for patient complaints, a poster advising of a zero tolerance policy towards abuse, one advising patients that they can receive text reminders for their appointments, one advertising anti-aging treatments such as Botox, which are available at the practice, and another advertising polishing and stain removal treatments. Other material on display included 'Healthy Mouth, Healthy Body' and Childsmile leaflets.

Behind the reception desk, the researcher observed some procedural checklists and a Childsmile Care Manual but saw no evidence of guidance documents. Team members reported that the practice does not have a website, Facebook or Twitter account; however, practice details are included on the IDH website. No patient information leaflet was observed, and although the receptionist advised that there was a £30 appointment cancellation fee, this was not advertised anywhere. Despite the practice being a Scottish Dental Practice Based Research Network REP practice, this was also not evident.

(2) Organisational instrument measure and guidance compliance

Analysis of team member's questionnaire results revealed that Rossi Dental scored highest in quality, effort and formalisation and lowest in guidance prioritisation, tradition and performance feedback. These results suggest, as with Hamilton Dental Care, that the team places considerable emphasis on the quality of care they provide to their patients. It also suggests that team members work hard to achieve goals and that a high degree of importance is placed on formal rules and procedures. Again similar to Hamilton Dental Care, the results suggest that lower emphasis is placed upon prioritising the implementation of new guidance, and in measuring and feeding back on job performance. Although 'tradition' was one of their lower scores at just over 50%,

this would suggest that established ways of doing things are neither more nor less valued by the team.

Rossi Dental was also not fully compliant with any of the three dental guidance areas explored in the questionnaire. Four members of Rossi Dental completed the questionnaire (two dentists and two dental nurses). One of the dentists reported full compliance with the Emergency Dental Care guidance; however, the rest of the team did not.

(3) Organisational barriers and facilitators to the translation of guidance

Compared with Hamilton Dental Care, Rossi Dental had a very different structure and management system in place, mainly due to being corporately owned. When interviewed, all team members referred to *"following the party line"*, having no leader within the practice and everyone being equal. When asked about leadership within the practice, comments included:

"I wouldn't put it down as anyone in particular … I mean it depends on what you mean by "leader," what, what sort of things? We don't …have, we, nobody's recognised as that, we don't have like a Lead Nurse. Em, dentists I would say have overall kind of, you know you would, if there was a real problem you would be discussing, but that's more probably clinical" **Participant 18 (Dental Nurse).**

"We kinda just, everything just gets flat-lined, we're all the same … nobody really takes charge on anything" **Participant 19 (Dental Nurse).**

However, interview data and practice observations did identify varying forms of leadership within the practice. For example, there was a clear hierarchy in terms of the dentists being considered more senior, and one of the dental nurses, although quick to deny it, appeared to offer a form of leadership within the practice. Interestingly, this particular dental nurse was the team member who took charge of the practice visit, giving the researcher a tour of the practice and introducing the team members. There did, however, appear to be some tension between the dental nurses in relation to this, and this pointed to some of the challenges they face within their working relationships:

"Who is the leader, or who tries to be the leader?... there isn't really a leader as such. Paula I think tries to be a bit of a leader, but em … it's a bit difficult because there's a bit of, don't know what the word is that you would use… because obviously she tries to be a leader, there's a bit of, there can be a bit of conflict sometimes……yep, we're all on an even keel, so that can be quite frustrating and she's … obviously no disrespect to her, but she's part-time as well, so it's quite frustrating to come into work, I'm full-time, she's part-time, now she's trying to tell me what to do, but em it's kind of an on-going issue to be honest …" **Participant 19 (Dental Nurse).**

The Practice Manager, although not based at this practice, was considered by all to be in charge and responsible for the majority of decision-making, for providing the team with information about policies, recommendations and guidance, and was described as the person they would go to in the first instance:

"…you know here on a day-to-day we kind of just muddle along and get on with it …Yeah, there isn't somebody that I would necessarily go to and, and say other than, Lorna. I mean I have said in the past 'let Lorna deal with it, she's the Manager, she's paid good money for it…and she's meant to be managing,' even though she's in Uddingston" **Participant 18 (Dental Nurse).**

As mentioned previously, the Practice Manager declined to be interviewed for the study and advised that the practice should not have taken part in the case study without prior approval from her and IDH. All team members made reference to the Practice Manager during the interviews and in their day to day working, and it was clear that she performed a pivotal role within the practice. It was reported that she is supposed to spend a day a week at the practice but that, in fact, a few weeks could pass without a visit. A number of frustrations were highlighted in connection with this situation and the length of time required to wait for responses if problems arise. One example of this concerned recent computer problems, which had taken ten days to resolve. During this period, the practice remained open but because there was no record of the patient appointments scheduled, on each patient's arrival, old paper files had to be sought and a new medical history form had to be completed. One participant commented:

“Like I said the Practice Manager doesn't come down very often, and obviously when she does come down Its quite hard 'cause she's got a stack this high and trying to go through everything …so it can be quite difficult, but we're a self-run practice, if you know what I mean, we just reply on each other, for emotional support and for work-related issues as well” **Participant 19 (Dental Nurse).**

The lack of clear leadership and not having a Practice Manager based within the practice were only some of the issues identified in relation to the transition of this practice from an independently owned to a corporate practice. This transition occurred around 4 years prior to the case study visit, and the receptionist and one of the dental nurses were the only team members to have worked in the practice before it was taken over by IDH. They reported that the transitional period had been difficult, as renovations were undertaken while the practice remained open, and during this time there was no dentist for six weeks. The receptionist, in particular, commented that this had been a very stressful time for her as patients were very demanding, wanting to arrange appointments, and this proved especially difficult for her due to her living locally and personally knowing a number of the patients. Subsequently, in her own admission, she reported having to be signed off sick as a result.

It was reported that on acquiring the practice, IDH introduced a number of new policies and procedure. For example, all treatments were currently to be paid for on the day rather than at the end of a course of treatment, cheques or over the phone payments became no longer acceptable, and cancellation fees were introduced. The receptionist reported frustration in connection with some of these changes and mentioned, in particular, the challenges she faces in terms of managing patients:

“Sometimes a lot of them are not happy because we do ask them every time they come in for the money; they prefer to pay it at the end…No, we’ve had that for about I would say a year, two years, now. But some patients still obviously want to pay by cheque and we don’t do that... they’ve stopped us taking payments over the phone now…which is a bit of a barrier, I think, for a lot of people. Because if they go away they were quite happy to go home and phone you with a bank card and give you the payment but we’re not allowed to do that now. That’s a new policy that has come in… I don’t know if there have ever been problems with payment cards. I think it’s a new thing that came through from head office that they’ve made everywhere. Something to do with policies

and licences and whatever for taking that, I think." **Participant 17 (Receptionist).**

In addition, the receptionist highlighted how her role had changed as a result of the transition in ownership. She described how she is currently required to produce weekly and monthly figures and reports, a role previously undertaken by the Practice Manager. She also reported not being comfortable using some of the computerised systems required by IDH and described it as a "pressurised task" saying:

"Sometimes I find the figures that they ask for, for the reports and things if I'm busy trying to do reports and things can be a challenge." **Participant 17 (Receptionist).**

One of the dentists also commented on finding it particularly frustrating, when they need to liaise with the receptionist to arrange appointments and manage patients, and find her busy with reports, commenting:

"She should focus on appointments, on…on, reception work and sometimes I find that I don't have access to her because she is doing figures, and figures should be done by a manager…" **Participant 21 (Dentist).**

Since starting work at the practice, both dentists highlighted a particular challenge in relation to antibiotic prescribing, which they described as being inherited from the previous practice owner. Both commented that they found that some patients presented with the expectation of being prescribed an antibiotic as a result of the previous dentist's prescribing behaviour. These patient expectations were identified as acting as a barrier to following best practice in relation to Drug Prescribing recommendations. Nonetheless, both dentists suggested that they were not willing to give in to such patient demands and mentioned using the SDCEP guidance document as a tool to show patients when and why antibiotics are not necessary. Despite this, neither dentist reported full compliance with the Drug Prescribing recommendations contained in the questionnaire.

"Old patients go back to history of this practice, they were used for a scale and polish to have antibiotics prescribed…and then I'm coming, doing the 'oh you're not giving me the antibiotics,' I said 'no, you don't need them', 'I think I need them doctor, Mr. C was giving me,' 'no, you don't need them anymore' …eh they are so persistent that I have to go, 'this is the paper, read it, you want to fight?'" **Participant 22 (Dentist).**

This particular dentist went on to say that if the patients did not like their way of working, they could go to another practice:

"Sometimes I'm pushing the things, telling them 'look, if you don't like it, you have the option of moving to a different practice', but I know that they will not move." **Participant 22 (Dentist).**

In terms of practice processes and systems, the professional and corporate image presented on arrival, did not appear to translate into systematic methods of working. During the day all appointments ran late so the surgery closed later than planned both at lunchtime and at the end of the day. The receptionist or dental nurse regularly came out into reception and advised patients that they were running behind. Despite the practice being constantly busy, team members never appeared rushed or stressed, although one team member did comment that she found running late frustrating:

"Running extremely late, but that's just kind of the nature of the business…, it annoys me when it could have been avoided but sometimes you just don't know what you're going to get" **Participant 19 (Dental Nurse).**

There did not appear to be any clear protocols or procedures being followed and the practice did not seem to be particularly innovative in terms of its administrative processes. However, there was a sense that each member of the team had an area of expertise, and to that end there was an element of team members having clear roles and responsibilities:

"Paula usually is ordering things, Stephanie is usually em managing all the, all the phone calls and, and eh failed autoclaves and other facilities, everything which fails she's on the phone …Sophie usually deals with computers …" **Participant 21 (Dentist).**

It was noted that one of the nurses tends to be tasked with all IT related issues, with other team members reporting that this was because “she is younger and up on these things”, but there was also a suggestion that other team members felt less confident using new technologies and innovations.

In relation to how the practice manages appointments, it was reported that the waiting time for appointments is around ten weeks. Both dentists advised that they try to make appointments using a risk based recall system; however, patients can act as a barrier to this with many preferring a traditional six monthly check up. One dental nurse commented that it can be difficult to persuade them otherwise:

“Years ago everybody was of the mind-set that when you came to the dentist you would have your treatment every six months, it doesn't need to be six months …it depends on how good your health is and your oral hygiene is, or your health issues, or whatever. if you've got a patient that comes in and really just, they've got no calculus, everything’s fine, 12 months, why not? if you've got a problem in between that come back.” **Participant 20 (Dental Nurse).**

When contacting patients to arrange new appointments, it was reported that IDH do not allow the use of stamps, due to cost, and so letters cannot be sent out from the practice. Instead there is a system for team members (mainly reception staff) to record information that needs to be sent out to patients on their computer system, letters are then generated and sent out from the IDH Head Office. This system appeared to generate additional and unnecessary work for team members. Text messaging was also used but these were again sent out from Head Office. In order to manage emergencies, it was reported that each dentist tries to leave a half hour slot free each morning to accommodate any unscheduled appointments and where there are cancellations or gaps in the appointment book the dental nurse will phone patients to bring appointments forward.

Communication was a strong theme to emerge from this case study. The dentist the researcher liaised with to arrange the practice visit had not briefed the team ahead of the visit, therefore, it came as a complete surprise to the rest

of the team on the day. From speaking to other team members, it was apparent that this particular dentist was often poor at communicating with the team. This was evident from briefly speaking to the Practice Manager, who was also unaware of the practice visit. Despite this, team members were very accommodating and managed to fit in an interview at some point during the day, with the exception of the receptionist who had to be followed up with a telephone interview.

Communication within team was reported as being face-to-face and informal. Team members advised never having formal team meetings and referred to using post-it notes to pass messages to each other. The dental nurses in particular felt that practice meetings would be beneficial and there was a sense that tensions between team members often escalated as a result of not having such a forum to air views. Comments included:

"Sometimes it would be good to have a team meeting, just to air little things that sometimes can grow, and if they're not aired when everybody's calm, when they become big, it becomes explosive." **Participant 20 (Dental Nurse).**
"…but a meeting I think would be quite good occasionally, even if it was once a month." **Participant 18 (Dental Nurse).**

Two of the dental nurses made reference to sharing a surgery and highlighted the importance of communicating:

"Usually, or we can even kind of leave Post-it notes, you know, like Paula works part-time so if there's anything that needs to be mentioned to Paula and, from say me, if there's something broken down or not working I'll probably leave a Post-in note" **Participant 19 (Dental Nurse).**

"… so it's really important between Stephanie and I to have communication, she just needs to know if anything's happened or anything that I really need to know, 'em she makes a point of telling me, like on duty she tells me." **Participant 20 (Dental Nurse).**

They also highlighted examples of when their communication systems break down:

"Some things don't perhaps get filtered through verbally, like reception might know about something, I might not hear about it… probably things like that, I mean we don't, you know somebody might get told something but not necessarily pass it on. I mean I know you could then have a Communication Book, but you, you don't necessarily have the time to write in that" **Participant 18 (Dental Nurse).**

"Obviously there'll be some days that you stuck a Post-it note somewhere and they've not got it, or Paula put somebody in the book and she doesn't tell you, she's just marked it on the book but she hasn't came [sic] through and said, and then you've tried to move a patient into this space but then you've got them on the phone, then you've got to the day and you've just realised she's put somebody else in that space" **Participant 19 (Dental Nurse).**

One of the dentists however, reported not seeing any point in having practice meetings in a practice that size, commenting:

"We are very small practice, eh so we don't have like you know big corridor, our regular team meetings are actually in our corridors … it's very easy just to speak to each other." **Participant 21 (Dentist).**

Within the practice there seemed to be a good atmosphere and there seemed no real difference in terms of how they communicated within and out with professional roles. There was evidence of a slight power struggle between two of the dental nurses, one older and more experienced, and the other younger and newly qualified. Both seemed to have different views on how things should be done and because they shared a surgery this seemed to add to the tension. During the interviews this issue was raised by almost all participants.

In addition to communication within the immediate team, the case study data also identified that communication externally with IDH, and in particular, with that of their Practice Manager, was having both a positive and a negative effect on their ability to implement new guidance and recommendations. It was reported that the Practice Manager was very much responsible for bringing new guidance to the team's attention and she would generally email this to them. They also reported receiving emailed information from the IDH head office and the health boards. It was advised that when such information is received, the receptionist, on the instruction of the Practice Manager, prints it out and pins it

to the staff notice board for everyone to read and sign, to show awareness of it. This information was observed by the researcher, along with the weekly bulletins from IDH, which were also displayed.

All team members spoke about passively receiving guidance and did not seem to take any responsibility for finding out about new guidance or recommendations. During the practice visit there was no evidence of SDCEP guidance documents in the practice; however, participants reported that the British National Formulary (BNF) and SDCEP Drug Prescribing guidance were used in the surgeries. In relation to receiving information about new guidance one dentist commented:

"I don't have very much control over everything that is printed and given to me, but I presume…you know it's her, again this is her job, what she should do. With IDH, if they decide we have to follow that policy, we have to." **Participant 21 (Dentist).**

Team members reported no appraisal system or any form of performance feedback. One dentist pointed out, that in four years IDH had never asked them to appraise staff, suggesting that this was something that should come from a higher level within the company. One dental nurse suggested that they only receive feedback if there is a problem:

"I think the only time…, if it's going right then there's no feedback, if something's going wrong or we're not doing what we should be doing, performance-wise, which is something really you can, oh I don't know how to say this, not "targets" but … I don't know, it's a horrible word, whatever eh if you're not, or apparently if we're over budget for spending on something, we get a lot of that feedback." **Participant 20 (Dental Nurse).**

It was sensed from the dental nurses that they did not feel appreciated, particularly at a company level, and that they would like to receive feedback in some format. One of the nurses commented:

"No, you don't really get much o' that to be honest. I don't know if it's because it's em, IDH is the largest UK dental corporation, I don't know if sometimes you maybe just get seen as a number." **Participant 19 (Dental Nurse).**

These findings coincided with the low score from the questionnaire data in relation to performance feedback.

There also appeared to be some barriers in terms of undertaking training for team members, although these barriers appeared to differ by role. The dentists reported being able to undertake any training they wanted with IDH's support and this was evidenced by the specialist training and services they were offering around implantology and cosmetic surgery, despite reporting that there was not a high demand for these types of treatment in the area. Their biggest barrier to training was reported as being the travel to London to undertake such training as nothing was provided more locally.

For the dental nurses, it was reported that they were not paid to undertake off-site training; furthermore, it had to be in their own time with them having to pay all their own travelling expenses. It was, however, pointed out that IDH have a training academy and online modules were accessible to them all.

Being a corporate practice clearly seemed to influence decision making within the practice. With no clear leadership, all team members spoke about referring to the Practice Manager or 'the management' when problems arose or decisions had to be made. This appeared to have time implications for getting things done, often causing unnecessary delays as well as frustration as a result. Examples of this included the system of mailings and text messages being sent from Head Office as well as having to wait for equipment to be repaired. One specific example given was that as part of IDH health and safety policy, team members were not permitted to change light bulbs, so it entailed a wait for someone to travel 50 miles to do this for them.

"Some of the decisions, we then automatically go to our Practice manager, other things we know that she'll just say 'get onto Head Office' and then you go through to Head Office and they put you through to different departments, either IT equipment or whatever…" **Participant 20 (Dental Nurse).**

"It's because...if I need to pass some problems, I need to phone the Practice Manager and if she's away, I think I'm losing time because of how busy we are." **Participant 22 (Dentist).**

In addition to the challenge of having a part time Practice Manager, Rossi Dental appeared to struggle with other challenges related to being a corporate practice. Team members commented on financial constraints, the dentists wishing the hygienist was there more often so that they did not have to do the scaling, staff occasionally being sent to work in other IDH practices, which required longer travelling time for them and generally just "feeling like a number" in the IDH system.

7.5 Summary of Case Study Findings

These two case studies were very different in terms of ownership, management and team size as well as in relation to the geographical location and the patient population, which they service. Hamilton Dental Care scored highest in the organisational instrument in the areas of quality, welfare and integration, and practice observations would support the high levels of integration and welfare, although this may have been predictable in a two-man team. They scored lowest in terms of guidance prioritisation and pressure to produce and the observational data supports that team members did not feel under pressure or rushed in their working day. That said, the instrument measures should be interpreted cautiously given that the team only comprised two people able to complete the questionnaire.

Rossi Dental scored highest in quality, effort and formalisation. 'Formalisation', in particular, ties in with the corporate structure and formalised rules and regulations they are subject to. They scored lowest in the categories of tradition, guidance prioritisation and performance feedback. The low score in performance feedback was very much supported by the interview data, and although they scored lower in 'tradition', they actually scored 50%, suggesting they may be traditional in some respects but not others. This was supported by observations which suggested that although quite a traditional practice in style

and in their working methods, they are innovative in terms of the specialist dental services they offer such as implantology and cosmetic surgery.

In terms of communication within these two practices, in Hamilton Dental Care communication was very much ‘informal’, which was in keeping with the informal nature of how the practice was managed. Despite this, these informal communication mechanisms appeared to work for them. In contrast, Rossi Dental tended towards formal procedures in general. In relation to communication, formal communication methods were observed from the Practice Manager yet within the rest of the team, it was more informal styles which were observed. This appeared to cause a level of confusion within the team and perhaps externally, as highlighted by the team lack of awareness in relation to my practice visit.

Despite the obvious differences there were some similar themes to emerge across the case studies. Leadership was a strong theme to emerge, albeit affecting the practices in different ways. In Hamilton Dental Practice strong leadership was apparent from the principal dentist and owner, and while this appeared to work well most of the time, there were instances where it could act as a barrier, particularly when a more formalised approach was needed. While their intentions to follow new guidance and recommendations were clear, their processes of implementation were haphazard, combined with what seemed to be a tendency to prioritise and tailor these recommendations to fit their context.

In contrast, as far as Rossi Dental was concerned, the team perceived they had no leader, which perhaps added to the passive attitude that emerged regarding the receipt and implementation of guidance. However, the Practice Manager clearly did take on a form of leadership and tried to facilitate adoption in terms of disseminating guidance to the team and developing processes to ensure it was read. Her role, however, was remote from the day to day working of the team, and this perhaps added to the power struggle observed between the dental nurses, trying to assume aspects of a leadership role in her absence. In both case studies, leadership appeared to be influential in the translation of

guidance. In some cases, this leadership acted as a facilitator while in others, it appeared to be a barrier. It could be argued that both forms of leadership stem from the ownership, and that perhaps, how guidance is implemented may need to be tailored to the ownership model that exists.

The impact of the patient profile or context of the practice also emerged. Hamilton Dental Care tailored their working systems, such as the day to day scheduling and appointment book management, to accommodate the chaotic lifestyles of their patients. In contrast, Rossi Dental's patient profile represented that of a close knit community, where most people know each other, and this seemed to act as a barrier when introducing new policies or methods of working. Finance and other external resources only emerged as a barrier to Rossi Dental, which is perhaps surprising since it is part of a group of corporate practices, where one might have expected greater access to resources than that to be found in an independently owned single dentist practice.

Overall, what emerged most strongly from these case studies is that 'one size does not fit all', with the key themes of leadership and context emerging as being most influential on the translation of guidance. The practices themselves appear to be tailoring new guidance and recommendations to fit with their ownership structure, their geographical context and significantly their patient profile. This reinforces the findings from an ethnographical study exploring how GPs and Practice Nurses make health care related decisions. Here the authors identified that Clinicians rarely used or accessed evidence from research directly and instead relied upon 'mindlines' (collectively reinforced internalised tacit guidelines), which are informed by brief reading but mainly through interaction with others members of the healthcare team, pointing to the impact that organisational level factors such as leadership and context may have on this decision making process.

7.6 Integration of Quantitative and Qualitative Findings

The final aim of this body of work was to integrate the findings from the questionnaire and case studies to determine which organisational

characteristics are most influential on knowledge translation and specifically the translation of guidance into practice. To do this, a mapping process was undertaken to identify where findings from the case studies related to the independent variables contained in the questionnaire (19 OCM dimensions and demographics). To facilitate the integration process, and in line with recommendations in the literature[254], a table was produced to provide a visual display of the results across both bodies of work and, to thus, illustrate the integration. At this stage, it was also important to reflect upon the DPOM dimensions and the key concepts they aimed to address in connection with knowledge translation. This was undertaken by referring back to the process undertaken when developing the questionnaire. (See Appendix 14).

Table 17 provides a visual display of the key findings in the questionnaire and case studies. Areas highlighted in blue reflect areas where there were some similarities in relation to the organisational level factors emerging as influential on the translation of guidance. In only a few areas, (highlighted in orange) did organisational characteristics identified as being predictive of guidance compliance, coincide with the case study findings. These were ‘integration’, ‘welfare’, ‘pressure to produce’ and ‘guidance prioritisation’. It should however be noted that the findings in relation to ‘welfare’, suggest that the lower the score for welfare the greater the probability that they will be compliant. This is interesting given that you may expect team members reporting higher welfare scores to be more likely to comply with guidance. The case study findings suggest that higher welfare scores may indicate better working environments, however do not necessarily influence the translation of guidance**.**

Leadership and context emerged as being most influential on knowledge translation from the case studies. Only two of the variables, associated with leadership in the DPOM (welfare and guidance prioritisation), were found to be associated with guidance compliance from the questionnaire results. These were both in relation to compliance with the OHAR guidance. The remaining variables, associated with leadership in the DPOM (autonomy, involvement, supervisory support, efficiency and tradition), were not significant.

This raises the question about what it is about implementing OHAR guidance recommendations that differs from implementing the EDC recommendations in relation to leadership. It may be that different forms or styles of leadership are required for these different guidance topics. It has previously been highlighted that the implementation of OHAR recommendations requires involvement from a wide range of dental team members, whereas implementation of the EDC recommendations is perhaps more influenced by non-clinical staff such as Practice Managers and receptionists. It may be that the role within the team, which is targeted by the guidance recommendations, is influential in the knowledge translation process. However, exploratory questionnaire analysis, which revealed a relationship between having a Practice Manager and compliance with the OHAR recommendations but not the EDC or DP guidance, does not support this theory.

It should, however, be noted that the variables contained in the questionnaire focussed on the leadership of the principal dentist, and it may be that other leadership roles emerge as influential, if specifically explored. The interviews highlighted the importance of other leadership roles within the team, and the case studies identified that in some cases dentists do not undertake a leadership role at all.

Integration was identified from the questionnaire results as being predictive of compliance with the EDC recommendations. The dimension of integration relates to the concepts of team work and collaboration, and these were also factors which emerged from the case study findings as potentially influencing guidance compliance. Arguably, they are also factors that are closely associated with and influenced by practice leadership. Once again, these findings however continue to raise questions in relation to what it is about following the EDC recommendations that differs from following the OHAR recommendations, in relation to team work, collaboration and leadership.

Table 17: Integration of Questionnaire and Case Study Findings

Organisational Characteristics	Case Study Findings*	Exploratory Analysis** (t-tests/chi-squared tests)			Regression Analysis**		
		EDC	OHAR	DP	EDC	OHAR	DP (n/a)
Practice Manager	X		X				
Computerised Patient Record	X						
Practice Ownership	X						
Treatment Type			X			X	
Autonomy							
Integration	X	X			X		
Involvement		X					
Training	X	X	X				
Supervisory Support	X	X					
Welfare	X	X				X	
Efficiency	X	X					
Tradition			X				
Quality		X	X				
Formalisation	X	X	X				
Innovation & Flexibility	X	X	X				
Outward Focus	X	X	X				
Learning & Reflection		X	X				
Clarity of Practice Goals		X	X				
Effort		X	X				
Performance Feedback	X	X					
Pressure to Produce	X			X		X	
Guidance Dissemination	X	X	X				
Guidance Prioritisation (Tailoring)	X					X	

*Key organisational characteristics to emerge as influential on the translation of guidance from case study data

**Key organisational characteristics to emerge as influential on the translation of guidance from questionnaire data

The other key theme identified in the case studies was context. Of the variables in the OCM related to context, it was also 'welfare' and 'guidance prioritisation' which were significant, again in relation to compliance with the OHAR recommendations. However, a positive association was observed between OHAR compliance and whether a practice was fully NHS, fully private or a mixture, relating to the context within which it is operating. The regression analysis supported this, suggesting that fully private practices are more likely to comply with the OHAR recommendations than those offering a mixture of treatments, and fully NHS practices are less likely to comply than those offering a mixture. Unfortunately, this was something that could not be observed during the case studies since neither practice visited was fully private.

Free text responses from the questionnaire findings also suggest that the patient context may be influential on the compliance with the EDC guidance in relation to patients being able or willing to present at the surgery within the recommended 60-minute contact period. Case study data also supported patient context as being influential in the translation of guidance. This was highlighted particularly in the case of Hamilton Dental Practice due to their patient profile and how they have to tailor their systems. It was also observed in Rossi Dental in relation to the context of inappropriate drug prescribing the current dentists described inheriting.

Some other interesting themes to emerge from the questionnaire free text responses included: a number of respondents highlighting that some team members were not based within the practice. This generally concerned Practice Managers, who were based at other practices and visited either on an agreed basis or as and when required. It was also cited that there may not be a Principal Dentist or indeed any senior staff based within a practice. This was particularly the case in corporate practices. This reinforced the case study findings in relation to remote practice management and unclear management and decision making systems, linking to both leadership and context.

7.7 Summary, Implications and Reflections.

Comparing and contrasting the results from across both quantitative and qualitative aspects of this study has provided some interesting and insightful findings. This process not only identified similarities in findings, but also afforded an opportunity to enhance the overall understanding of the results, through the identification of areas where the findings differ.

It also allowed the context within which these differences existed to be examined through practice observations which afforded the opportunity to observe and reflect upon the use of guidance documents and written protocols and procedures. Using the thematic framework to analysis the findings across each case study practices provided consistency through the process whilst at the same time allowing for the individual features of each case study to emerge.

While these findings should be taken with caution, there are some consistent areas that emerge across both approaches, and perhaps highlight some organisational characteristics that impact upon the translation of guidance. A full discussion of these findings, general conclusions from the thesis as a whole and study strengths and weaknesses are presented in Chapter 8.

CHAPTER 8: DISCUSSION AND GENERAL CONCLUSIONS

8.1 Key Messages

KEY FINDINGS

- Dental guidance is not being fully implemented into routine clinical practice.
- Compliance varies across practice settings, structure and by guidance content.
- The findings of this study identified two conceptual themes that may influence the translation of guidance: (1) Relationships and (2) Structure and Administration.
- Tailoring guidance recommendations and implementation strategies may facilitate Knowledge Translation and hence improve quality in health care.

KEY IMPLICATIONS

- The use of multi-methods can greatly enhance research findings. In this study practice interviews and observations provided an in-depth understanding of the quantitative findings.
- The Dental Practice Organisation Measure (DPOM) has the potential to be used as a reflective practice development tool by NHS Education for Scotland. This quality improvement tool can be used by dental teams to measure, reflect and effect change in their current practice.
- A mechanism is now in place for the use of verifiable CPD to facilitate encourage use of the DPOM in practice.
- The findings of this work will be fed into the SDCEP guidance development process in order to shape the guidance development process and inform the targeting of resources

FURTHER RESEARCH

- Use case study methodology to explore organisational characteristics across other primary care settings, (e.g. Optometry and Pharmacy) in order to identify similarities and differences to develop future KT interventions.
- Use of the DPOM as a practice development tool to measure quality improvement in general dental practices.
- Use trial methodology to explore the impact of using CPD as an incentive to encourage participation in health services research.

8.2 Introduction

Numerous studies have attempted to identify the best means of translating health-related research findings into practice yet the evidence shows that most quality improvement and knowledge translation (KT) initiatives only work some of the time, in some circumstances[26]. There is also a recognition that factors at multiple levels need to be examined, not only the behaviour of individual healthcare practitioners. This includes factors at an organisational level[26,255]. In particular, studies have identified that KT research needs to examine the interaction between the translation of guidance and its context[26] and that cultural and organisational factors may be preventing the translation of crucial research findings into routine healthcare delivery[256].

In recent years there has also been an increased focus on the need to change the organisational culture within the NHS[20,37,38,257], yet little is known about the organisational culture within many primary health care settings. One example of this is general dental practice, where limited evidence exists about the impact that organisational factors, such as the structure, culture and management, may have on the translation of evidence based guidance. The work surrounding this thesis sought to address this gap, through the use of a multi-method research design.

8.3 Thesis Aim

The aim of this thesis was to investigate which organisational characteristics of primary healthcare organisations influence the translation of guidance into practice.

8.4 Research Question and Objectives

In order to address the aim of this thesis this study utilised a three phase multi-method approach. The key research question was:

“What organisational characteristics of primary care organisations influence the translation of guidance into practice?”

As described in Chapter 1, this research question was divided into three specific objectives:

(1) To explore the structure, culture and management in primary care organisations.

(2) To develop a self-report questionnaire to explore structure, culture and management within general dental practices.

(3) To determine which organisational characteristics are most influential on knowledge translation.

8.5 Study Overview

The study was conducted in three phases, using the Receptive Healthcare Contexts for Change (RHCC) model as an initial guiding framework, and its evolved version, the 'Knowledge Translation in Primary Care' model to underpin the research.

Phase 1

In order to meet Objective 1, two reviews were undertaken. Firstly, a review of evidence synthesis methods to determine the most appropriate synthesis methodology to use for the literature review. This was followed by a literature review exploring structure, culture and management in primary care organisations, through the identification of organisational barriers and facilitators to the translation of guidance.

Phase 2

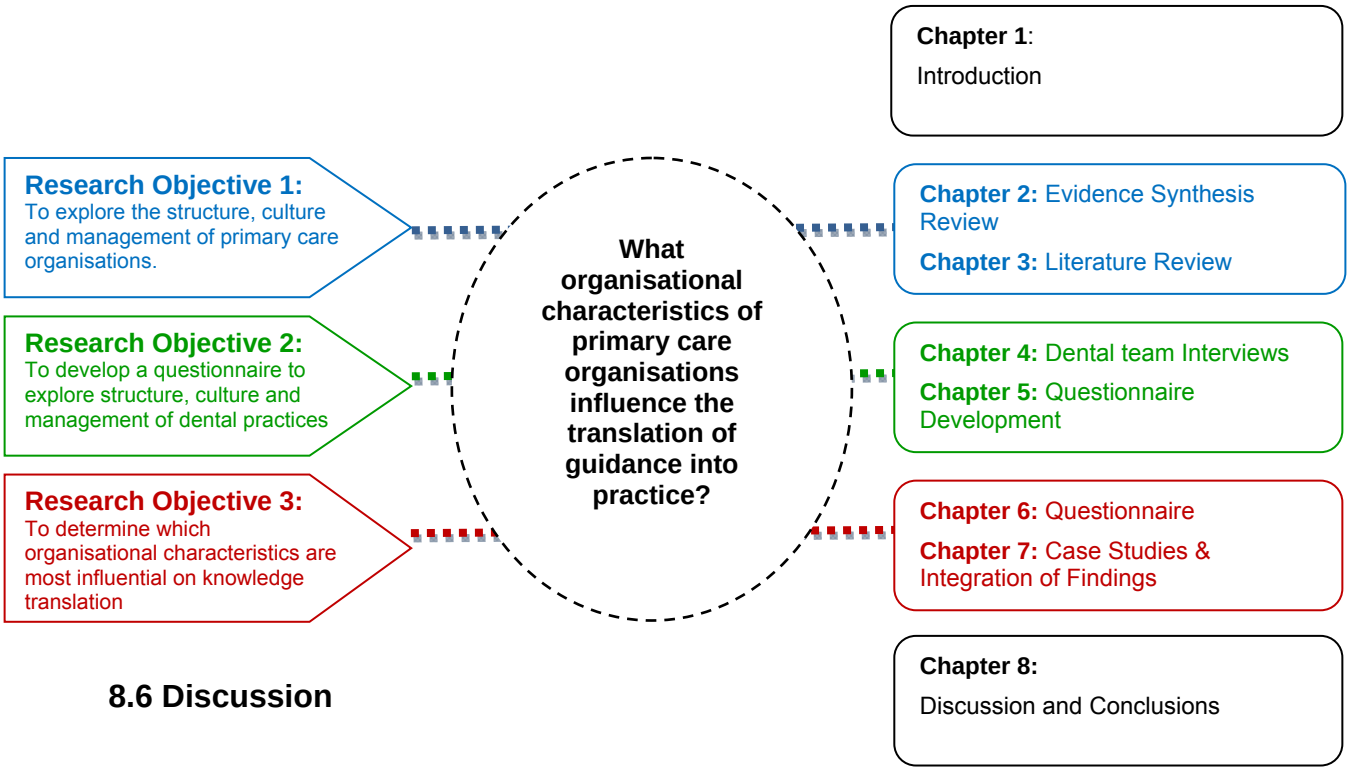
In order to meet Objective 2, semi-structured interviews were conducted with dental practice team members to examine how the barriers and facilitators identified in the literature review relate to those that exist within general dental practices. The interviews also explored the notions of organisational culture that exist in dental practices in Scotland. Based on these findings a dental team questionnaire was developed and piloted to explore structure, culture and management in dental primary care.

Phase 3

To address Objective 3, the dental team questionnaire was disseminated to 400 dental practices in Scotland. In addition, two dental practice case studies were conducted. These findings were integrated to identify which organisational characteristics are most influential on knowledge translation. Figure 1 below is a reminder of the thesis structure as described in Chapter 1.

Figure 1: Thesis Structure

(as originally provided in Chapter 1)



8.6 Discussion

Research Objective 1

In order to address the first objective of the thesis, an initial review of evidence synthesis methodologies was conducted. This process revealed that many methods exist, with a rapid increase in the number of approaches evident. This is in terms of new approaches being developed, particularly focussing on the synthesis of qualitative findings, as well as more established methods being adapted in response to the changing needs of the health and social care context. No one best approach emerged as being favoured in the literature; however, what was apparent was that whatever approach is taken, researchers should be mindful of the purpose of the research and the appropriateness of the method to the type of evidence being synthesised.

The review described in Chapter 2 examined some of the more prominent evidence synthesis methods currently used and highlighted their relative strengths and limitations. It also provided examples of the types of studies and contexts within which these methodologies have been utilised. This body of work did not seek to be exhaustive or indeed provide a detailed critique of all available evidence synthesis methodologies available, such comprehensive reviews have already been undertaken by experts in this field[31,96]. This piece of work was a thorough review with the intention of identifying an appropriate method to use for a thesis literature review.

Examination of the literature identified a useful way of distinguishing evidence synthesis methods in relation to whether they are 'integrative' or 'interpretive' approaches. 'Integrative' describes approaches, where study findings are aggregated or combined for analysis, whereas 'Interpretive' approaches involve a more inductive process where higher order constructs or theories are identified. Whilst an interpretive approach such as Meta-Ethnography, Grounded Theory, Realist Synthesis or Critical Interpretive Synthesis may have generated new higher level theories about the structure, culture and management of primary care organisations and the impact this may have on the translation of guidance, this was not the purpose of this literature review. The purpose was to identify the main barriers and facilitators to the translation of guidance within these organisations, and hence an approach more focussed towards 'integrative' methods, was selected.

Based on this exploration of evidence synthesis methods and their contexts of use, a 'best fit' framework synthesis was selected. This approach was rapid, transparent and structured and hence suited to the objectives of the literature review. An additional benefit of this approach was the ability to use an existing conceptual framework from the outset, allowing the 'Receptive Healthcare Contexts for Change' (RHCC) model, to be used as an initial framework to manage the data. Despite being classified towards the 'integrative' end of the evidence synthesis spectrum, it is argued that 'best-fit' framework synthesis accommodates the use of both integrative and interpretive approaches as it

allows for the use of pre-defined categories as well as providing an opportunity to incorporate emerging themes.

Chapter 3 describes what was a comprehensive literature review exploring structure, culture and management in primary care organisations. This was undertaken through the identification of organisational barriers and facilitators to the translation of guidance as well as through the exploration of notions of organisational culture that exist. There were a number of novel aspects to this review. Prior to this study, the 'best fit' framework synthesis approach had never been used by anyone other than members of the methodology development team, and to the researcher's knowledge, apart from this work, this is still the case. It has also never been used within the context of small primary care organisations, therefore findings from this study and critique of the process, add to the development of this relatively new methodology.

In addition, using the RHCC model as a framework to underpin the literature review was a novel approach to its use. The emergence of the new model, allowed for the study to be underpinned by this ideology throughout, increasing consistency and robustness. This model has never been used in a similar fashion and again provides an example of a new approach to KT in health services research.

This review followed traditional systematic review methods, albeit undertaken by a single researcher. This was due to it being undertaken as part of a funded PhD study. The comprehensive nature is demonstrated by the range of included studies and the breadth of barriers and facilitators to the translation of guidance identified. It seems unlikely that additional factors would have emerged through the inclusion of additional studies, and this is supported by the findings of the literature review update carried out in March 2016. It is therefore argued that the review achieved its objective of identifying the key organisational barriers and facilitators that exist in primary care organisations in relation to the translation of guidance.

As described in Chapter 3 the barriers and facilitators to emerge from the literature did not neatly fit into the existing RHCC model. An advantage of the 'best fit' framework synthesis approach is that it encourages a level of interpretive thinking and allows for the adaptation of existing frameworks. As a result, the RHCC model was revised to more accurately reflect the data emerging from the literature. In hindsight, this should not be surprising given that the original RHCC model was developed from case studies carried out in large scale organisations (District Health Authorities). It seems reasonable, therefore, that data being synthesised from studies conducted in small primary care organisations may differ in focus. Furthermore, this literature review was specifically exploring factors related to knowledge translation and the implementation of guidance, as opposed to a more general examination of organisational change.

As a result of this process, the RHCC model was revised and a new model emerged which was more suited to the study context. This new model was labelled the 'Knowledge Translation in Primary Care' model. Whilst still in keeping with the original ideology of the RHCC model, this emergent version contained seven categories. Clear definitions were produced for each category, and the relationships or associations that exist between these categories, were identified. This emergent model was used to underpin all aspects of the study design going forward.

Using the 'Knowledge Translation in Primary Care' model as a lens through which to view the data, the literature synthesis identified seven key themes or notions of organisational culture, which appeared most influential in the translation of guidance. These were: communication, team work, collaboration, flexibility, prioritisation, guidance dissemination and expectations.

It is worth noting that the vast majority of studies examined during this literature review were set within general medical practice, with only one of the studies identified set within dentistry. This in itself identifies the need for studies such as this one, exploring organisational level factors in healthcare settings such as dentistry, as well as other small health care organisations. Whilst potentially

transferrable, the key themes identified in relation to the translation of guidance, emerged mainly from the general medical practice literature. It was, therefore, important to determine whether these factors were indeed relevant in a dental context. This reinforced the need for dental team interviews to explore these findings further.

Research Objective 2

In order to address the study's second objective, to develop a questionnaire to explore structure, culture and management in dental practices, interviews with a range of dental team members were undertaken. The literature review findings and the newly developed 'Knowledge Translation in Primary Care' framework were used to develop the interview schedule and to guide data analysis.

Findings from the dental team interviews identified two overarching themes in relation to the translation of guidance. These were leadership and communication. In addition, other factors such as decision making, context, guidance dissemination, external influences such as resources, and factors around practice systems and learning, emerged as potentially influential. There was considerable overlap in findings from the literature review but new themes did emerge and the data provided a greater understanding about what it is about certain concepts that are particularly relevant to knowledge translation in a dental setting. Examples of this included understanding how, why and in what circumstances dental teams prioritise guidance, as well as what it is about the expectations of dental patients that impacts upon a dental team's ability to follow guidance. This appeared to differ based on practice and patient context.

The four practices participating in these interviews had previously taken part in a Randomised Controlled Trial (RCT) exploring the translation of SDCEP's Cleaning of Dental Instruments (Decontamination) guidance. The day-to-day management of this RCT had been led by the researcher and hence this provided an opportunity to utilise existing dental practice compliance data. Practices that had taken part in the Decontamination RCT were ranked in terms of their compliance with 13 key recommendations within this guidance, and from this, two practices of high compliance and two of lower compliance were

recruited to participate in the interviews. Throughout the dental team interviews and during the analysis process the researcher was blinded to the compliance level of these four practices. The findings of the dental team interviews described in Chapter 4 were written in full before the researcher was un-blinded, hence researcher bias in relation to practice compliance levels was minimised.

Using the findings from the literature review and dental team interviews, Chapter 5 describes the process of developing and piloting a dental team questionnaire to explore structure, culture and management within dental practices. An initial scoping review of the literature did not identify any one instrument that would explore the organisational characteristics identified in the previous work. Therefore, through a comprehensive mapping process, The Organisational Climate Measure (OCM) was selected as the closest suitable validated instrument. This instrument was adapted to make it specific to the dental team context, and this was incorporated into a dental team questionnaire, which also included questions to determine compliance with three guidance topics. A thorough piloting process was then conducted to ensure the questionnaire was suitable for completion by the whole dental team and to explore methods of maximising response rates.

As part of this piloting process, some invaluable feedback was received. Some of this related to the questionnaire content, and in particular, in relation to the dental structures that exist in Scotland. However, the most valuable feedback was a suggestion to offer Continuing Practice Development (CPD) for participation. Prior to this study, verifiable CPD hours had been offered for participation in other dental research but only where it involved a full practice visit or training exercise, never for the completion of a questionnaire. Working with colleagues at NHS Education for Scotland, the researcher developed a CPD pack which was approved to offer verifiable CPD hours to not only the pilot practices, but also to offer it as an incentive to dental team members to participate in the full questionnaire study. Whether this incentive increased questionnaire response rates is uncertain; however, it introduced a new means of encouraging participation in questionnaire based studies, which has since

been used in other dental research projects, and has the potential to be transferrable to other primary care settings.

Research Objective 3

The final objective of this thesis was to determine which organisational characteristics are most influential on knowledge translation, by conducting a dental team questionnaire and in-practice dental case studies.

The questionnaire results, presented in Chapter 6, revealed some interesting findings. Compliance with the three topics of dental guidance examined, (Emergency Dental Care (EDC), Oral Health Assessment and Review (OHAR) and Drug Prescribing (DP) was variable. Forty-one percent of respondents (141/349) reported full compliance with the EDC recommendations, 19% (63/349) reported full compliance with the OHAR recommendations and only 4% (12/349) of respondents were fully compliant with the DP guidance. This finding in itself identifies that despite guidance being available for the dental profession, this is not being translated into routine clinical practice. Furthermore, self-reported compliance in questionnaire based studies can be enhanced by respondents as a result of social desirability bias (SDB), and so it is possible that levels of compliance are actually lower than identified here. These reported low levels of compliance reinforce the need for studies exploring KT in primary care settings in order to identify why, and in what situations, recommended best practice is not being complied with.

In relation to the EDC recommendations, the results of the regression analysis revealed that ‘Integration’ may be associated with compliance. This suggests that the more integrated (extent of trust and co-operation between team members) a practice is, the more likely they are to have a procedure for managing emergency or unscheduled care, have provisions in place for this when the surgery is closed, and are always able to ensure that a dentist makes contact with a patient experiencing a dental abscess or trauma within a given time frame of 60 minutes. This finding in itself is plausible, but it does not explain why integration would not also be associated with compliance with the OHAR recommendations.

The regression analysis revealed ‘Welfare’, ‘Pressure to Produce’ and ‘Guidance Prioritisation’ as being associated with compliance with the OHAR recommendations. This indicates that the extent to which team members feel valued and cared for, a slower pace of work with less pressure to meet demands and the less a team prioritises or cherry picks from guidance recommendations, the more likely it is that, a head and neck assessment and caries and restorations will be recorded for new patients, and a risk based recall interval and long term personal plan will be assigned. Again there are aspects of these findings that seem plausible, particularly in relation to a practice being more likely to comply if team members are experiencing less pressure, such as time constraints. Previous work exploring the implementation of OHAR recommendations, highlighted that the time to carry out this enhanced dental examination, not to mention the additional time spent recording information and preparing documents, such as long term personal care plans, can act as a significant barrier to its implementation[250].

In relation to DP, the low levels of compliance and lack of variability between the 12 respondents, who did report full compliance, meant that logistic regression was not appropriate. Exploratory analysis did, however, suggest that dental teams experiencing a slower pace of work, or less pressure to reach specific targets, may be more likely to be compliant as was the case in relation to the OHAR recommendations.

Low levels of compliance with the DP guidance is not particularly surprising given evidence published from other studies. In Scotland, there is known to be a wide variation in dental drug prescribing[258]. In fact, antibiotic prescribing in dentistry accounts for around 9% of the total antibiotic prescribing in primary care in Scotland, with this figure rising in recent years[259]. It is known that in many cases antibiotics are prescribed inappropriately to patients with dental emergencies[260], and this lack of recommended practice is contributing to an increasing risk of antimicrobial resistance. This is a huge public health problem not to mention a risk to patient safety.

A recent interview study with general dental practitioners in Scotland to explore the factors that influence the use of local measures instead of prescribing antibiotics to manage bacterial infections, found that a lack of time significantly influenced dentists' decision making process. This was found to be specifically in relation to inadequate time allocation per patient and the lack of emergency slots available within patient management systems. It was also reported that patient factors, such as their demands or expectations, influence dentists' prescribing choices[261]. This is in line with the findings from this study and supports the association between pressure to produce and guidance compliance.

Two clear themes emerged from the case studies as being influential on the translation of guidance within dental practices. These were leadership and context. Leadership emerged in a number of forms. The impact of having a Practice Manager, leadership exerted by a principal dentist or leadership offered by dental nurses all appeared to play a part in the translation of guidance. In addition, it could be argued that many of the organisational dimensions identified from the questionnaire findings as being associated with compliance, such as welfare, integration, prioritisation and pressure to produce, are related and influenced by the form of leadership that exists within a practice. Context emerged strongly from the case studies, specifically in relation to the patient profile, but also in relation to practice ownership.

Integration of questionnaire and case study data revealed some similarities and differences in findings. The dental team questionnaire identified generally low compliance with the three topics of dental guidance and identified some organizational characteristics, which may be associated with guidance compliance. Whilst some of the questionnaire findings appear plausible, they do not reveal any organisational characteristics that are influential on guidance compliance across all three topics, leaving the question about what it is about some guidance recommendations that make dental care professionals follow them in some contexts unanswered.

In addition, if these findings are considered in relation to what was identified through the initial dental team interviews, the two practices reporting high compliance with the Decontamination recommendations were Archibald Dental Practice and Campbell Dental. In both cases, they reported full compliance with all 13 recommendations. Black's Dental Practice and Davidson's Dental Care reported lower levels of compliance. Interestingly when considered in relation to the questionnaire results, which indicate fully private practices may be more likely to comply with certain topics of guidance, this is at odds with that finding. Campbell Dental was a fully private practice, but Archibald Dental practice offered 90% NHS treatments. In relation to leadership, Campbell Dental had a full time Practice Manager, who clearly provided strong leadership to the practice regarding new guidance and recommendations, and had implemented clear systems and methods of communication. Although there was no Practice Manger in Archibald Dental Practice, there was still leadership in the form of the husband and wife team who owned the practice. This supports the suggestion that leadership may exist in different forms and styles in dental practices and not necessarily in the shape of one person or a pre-defined role. Both of these fully compliant practices made reference during the interviews to prioritising and cherry picking from guidance documents, which is interesting since they report complying with all the recommendations. It may be that there is something about the topic of Decontamination that makes dental team members prioritise this guidance and this again points to the guidance context.

In order to make some sense of the study findings as a whole and consider how they can be interpreted to answer the overall research question, the findings were mapped under conceptual headings. This was an approach used by the developers of the original OCM instrument and was based on mapping the organisational dimensions into four distinct quadrants: human relations, internal processes, open systems and rational goals. This is based on the Competing Values Model[15] and is a useful approach when reflecting on how best to implement findings[14]. Following this approach, given the different context and objectives of this study, it is argued that the findings map under two conceptual headings, one concerning the human relations aspects or relationships that exist in healthcare organisations, and the other encompassing the structural

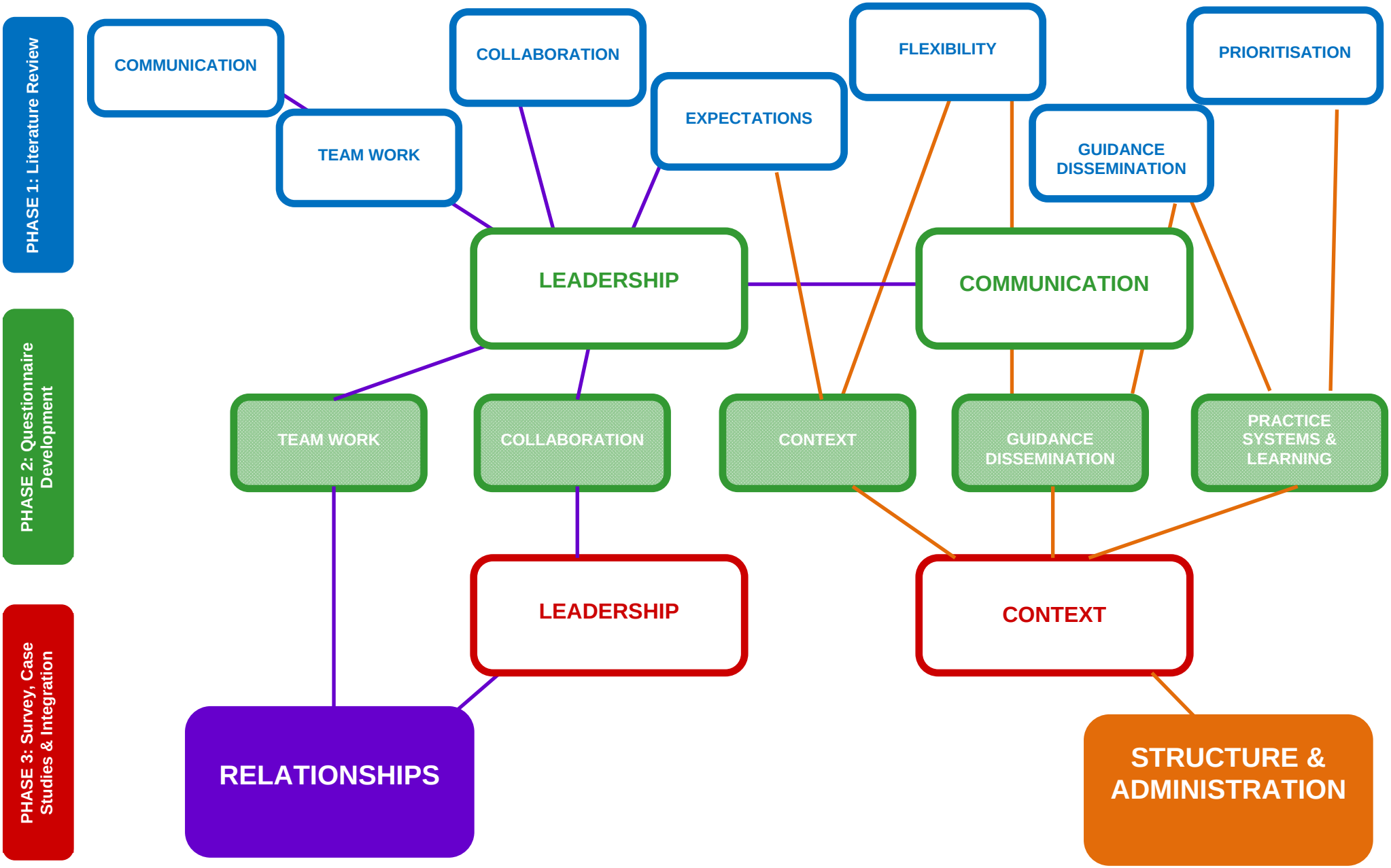
and procedural aspects of healthcare organisations. A diagram presenting the full study findings, across all three phases, and how they link to identify these two conceptual headings is presented in Figure 13.

Taking these findings on board, one approach for the future may be to explore ways of tailoring guidance recommendations and implementation strategies. This would allow differences in relationships and structural and procedural processes to be accounted for and may facilitate knowledge translation.

Tailoring healthcare is an emerging field not only in the literature but is also often the focus of media headlines. Recent examples include the NICE recommendation urging a tailored approach to the treatment of dying patients rather than what has been described as a 'tick box approach'[262]. In addition, NHS England has recently publicised a tailored approach to maternity care. This new approach to maternity care offers patients their own personalised budgets, which they can tailor to their own healthcare and maternity needs[263]. Offering patients budgets to allow them to manage their own healthcare is an approach which has already been utilised for the elderly, disabled and those with long term health conditions, such as heart disease. Although this is somewhat different to the uptake of guidance by healthcare professionals, it does suggest that a tailored approach is perhaps the direction that healthcare is travelling in, and that guidance developers and implementors need to adapt to this changing context.

The results of this study confirm that there is no 'right' quality improvement or KT approach that will be effective in all organisations or contexts[264,265]. The findings of this thesis support the findings of Bate et al, who highlighted that sustainable organisational change initiatives need to be designed in context to fit the particular set of local circumstances[266]. One way forward for guidance developers and those responsible for its implementation may be to explore how guidance can be tailored to the varying contexts that exist in primary care, and to then provide tools to allow healthcare professionals to make decisions on its translation into their clinical setting robustly and according to research evidence.

Figure 13: Study Conceptual Diagram



8.7 Study Strengths, Contributions and Impact

This study benefits from a number of strengths. Firstly, there is the multi-method approach adopted. This study has employed both qualitative and quantitative approaches throughout. Findings from the literature review and qualitative interviews were merged in order to inform the development of the dental team questionnaire. Furthermore, the dental team questionnaire was conducted alongside in-practice case studies so that findings from all aspects of the study could contribute to the overall study findings. There is evidence that the use of multiple methods, can enhance research findings, allowing the strengths of each approach to reinforce the overall study design[267]. As a result, this can produce a more complete or holistic contextual portrayal of the phenomenon being studied[268]. It is specifically argued that, as was the case with this study, when exploring organisational level factors, multiple viewpoints achieved through the use of both qualitative and quantitative methods, can improve the accuracy of any judgements concerning the data. In particular, the observational data gathered during the practice pilot visits and case studies provided great insights into the data collected using the Dental Practice Organisational Measure (DPOM) and to the integration of the questionnaire and case study findings. This is evidenced in Table 15.

The use of the RHCC model as a framework to manage the literature review data was a novel approach. This model has never been used in such a way and the adaptation of it to develop a new model, the ‘Knowledge Translation in Primary Care’ model, provided consistency in the design throughout all phases of the study. The development of this new model also produced a framework which may be tested in future dental and other primary care research studies.

The review of existing methods to explore organisational level factors in primary care, revealed no perfect tool. Examination of the literature and discussion with experts in the field revealed that this is an area awash with newly developed tools, most of which have never been tested in circumstances over and above their original development process. Using an existing tool and adapting it perhaps had it disadvantages, but it did allow for the further development of such a tool and for a new dental team instrument to be developed. Since this study was undertaken, the Dental Practice Organisation Measure (DPOM) tool has been used by colleagues in NHS Education for Scotland to explore dental practice characteristics in Vocational

Training practices, and it is hoped that further work can be undertaken to allow further refinement.

Another unique aspect of this study was the introduction of CPD as an incentive for questionnaire participation. As part of the condition of practices receiving verifiable CPD hours, the researcher produced individualised practice summaries for all 96 participating dental teams. This was a significant piece of work, however, it provided an additional insight into the practice level findings. When practices received this summary, they were asked to convene a practice meeting to discuss their results and complete an action plan for areas of improvement. These action plans were then returned to the researcher. As a result, it could be argued that participating in this study had an added positive effect for practices by encouraging greater communication and reflection.

Although undertaken within a dental context, these findings and the study methodology could be transferred to other healthcare settings. In particular pharmacy and optometry, which operate within similar settings. Future work could also explore these settings using a similar methodology to test this transferability.

8.8 Study Limitations

Undertaking this study did of course present some challenges. Firstly, it could be argued that participating practices may represent the more motivated dental teams and hence findings may be biased as a result. That said, this is the case for all research studies where participation is voluntary. For a number of aspects of the study (questionnaire piloting and case studies) participating practices were Scottish Dental Practice Based Research Network (SDBPRN) Rapid Evaluation Practices. This again may suggest that they would tend to be positioned towards the more motivated end of the spectrum; however, study findings suggest that being keen to participate does not necessarily guarantee best practice. As is the case in most questionnaire and interview studies, it is also possible that participants have provided socially desirable responses. This is true, however the use of practice visits during the questionnaire pilot, as well observations as part of the case studies, has resulted in a range of data being collected and contributing to the overall findings.

In relation to the questionnaire, the adapted version of the OCM was not validated, and this was highlighted by issues surrounding the newly added scale of Guidance Prioritisation. Further work is needed to ensure that the newly developed DPOM Tool is appropriate for future use.

The questionnaire response rate was also lower than anticipated but, as discussed, a number of measures were taken to maximise responses. Attempting to gather practice level data was challenging, particularly due to the range of dental team sizes. The criterion for inclusion in the analysis (one dentist and one other non-dentist from the team) was low in order not to exclude single-handed practices; however, in larger practices, where only a small number of questionnaires were returned, responses may not have reflected the practice views as a whole, and again it may be that the more motivated team members participated. This may have skewed practice findings. Due to the low practice level response, analysis was conducted at the individual (level) rather than the practice level. For the regression analysis however, data was clustered by the practice ID variable, to control for any practice level characteristics that might influence the result.

Only two case studies were undertaken. In these case study practices, the dental teams were working within very specific patient and organisational contexts. Therefore, consideration should be taken in relation to the transferability of these findings to other dental and primary care settings. It was also unfortunate that neither was fully compliant with the three dental topics being explored. It may have been optimal to have one practice fully compliant with all three topics of guidance and one with none, however unfortunately no practices within the sample were fully compliant with all three topics of dental guidance. If this had been possible, findings may have differed however, case study approach is not intended to be generalizable and the researcher has strived throughout this process to be transparent regarding the selection of practices and how the research was undertaken. It is argued that case studies, because they detail specific experiences in specific contexts, provide an opportunity to learn about the relationships between organisational processes and the context[269]. In addition, through the questionnaire pilot process, three practices participated in practice visits, which also added to the wealth of evidence collected.

8.9 Reflections

This study provided an opportunity to engage in a wide range of research methods and techniques. This was not only in terms of qualitative and quantitative approaches but also in respect of the different qualitative approaches used such as; face to face interviews, telephones interviews, case studies and observations. These different methods for evidence gathering afforded an opportunity to enhance and develop my research skills. For example, reading body language and recognising differing tones of voice. It can be argued that both face to face and telephone interviews have their own relative strengths and weaknesses in relation to how participants relate to the researcher and in relation to the level of context and insight the researcher can gain.

In practice observations provided an opportunity to really see what happens in day to day practice and to observe interaction with patients, be it in the waiting room or the surgery. On reflection, spending more than one day in each of the case study practices may have provided additional insight to the practice's every day workings and allowed the dental team a chance to get used to me in their surroundings, perhaps opening up more.

8.10 Importance to the NHS

The Cooksey Report[256] and The Scottish Government Health Directorate's research strategy[270] highlight the importance of improving the translation of research findings into clinical practice. Although current studies focus on the influence of individual level behaviours, little is known about the impact of behaviours at an organisation and team level. This study attempted to address this gap. It is hoped that the findings will improve the quality of the dental health of patients in Scotland by contributing to a comprehensive framework for the translation of guidance into practice.

By undertaking this study within the Translation Research in a Dental Setting (TRiaDS) programme, itself embedded within the SDCEP guidance development process, has provided a unique opportunity to shape the guidance development process and inform the targeting of resources to improve knowledge translation, thus ultimately leading to significant improvements in patient care.

Through dissemination of the findings, it is anticipated that the key messages from this study will inform patients, healthcare professionals, guidance developers,

academics and policy makers with a view to contributing to the Scottish Government's strategic objectives of making Scotland Smarter, Wealthier and Fairer, Greener, Safer and Stronger and ultimately Healthier[16].

8.11 Recommendations and Implementations

The results highlight the challenges of attempting to measure organisational factors and the complexities that exist around guidance implementation, given the varying contexts that exist in primary healthcare.

Although this study was on the whole based within the context of dentistry, the findings appear highly relevant to primary care in general. The results have identified aspects of healthcare organisations that appear influential on the translation of guidance into practice. It has highlighted the importance of the relationships that exist within healthcare organisations, such as leadership, as well as the structural and administrative context that exist in relation to knowledge translation. Recommendations for the tailoring of guidance both to the patient and practice context will be fed into the guidance development process through links with SDCEP.

An additional finding to emerge from this work is the potential use of CPD as an incentive to healthcare professionals and how this can be used to encourage healthcare organisations to reflect upon their current practice using individualised feedback and developmental plans.

8.12 Further Research

There are a number of further research opportunities arising from this study. Firstly, use of the 'Knowledge Translation in Primary Care' model as a guiding framework for future studies set within other primary care settings. Examples as already highlighted, are Pharmacy, Optometry or indeed, secondary care organisations such as Nursing Homes, which possibly experience similar organisational level barriers and facilitators to the translation of guidance. Building on the current work the researcher is involved in, it may be possible to take forward the findings of this study, using case study methodology, to explore similarities and differences in the translation of guidance, across contexts in order to inform the development of future interventions to enhance the uptake of recommended care.

Further exploration and refinement of the dental team questionnaire, and in particular, the use of the DPOM as a way of exploring the organisational characteristics of dental practices could also be taken forward, as well as a consideration of how this instrument could be adapted for use in other primary care settings. In addition, exploration of the action plans received as part of this study may help to guide future work in this area. Further work could be done to explore whether practices take forward their developmental plans to implement change and whether this methodology could be utilised in healthcare settings other than dentistry. Finally, although CPD has been used as an incentive to participation in this study, there is no evidence to suggest this actually increases participation. Future work could explore this, using trial based methodology, to determine whether using CPD hours as an incentive has a real impact on participation in questionnaire-based research studies.

8.13 General Conclusion

This study has used multiple methods to explore the organisational characteristics of healthcare organisations that influence knowledge translation. Although set within the context of dentistry, the findings are highly relevant to primary care in general and the methodology is transferrable to other primary care organisations.

Integration of the study findings suggests the emergence of two conceptual themes. These relate to the relationships that exist within primary care teams, including leadership, decision making and team work amongst areas, and the structural and procedural aspects, which also exist. It is suggested that in the future, guidance and recommendations may be tailored to incorporate these factors and allow for the differences that exist across organisations so as to facilitate knowledge translation and improve compliance with best practice recommendations, hence, improving the quality of care for patients. Guidance tailoring may be set at the level of guidance developers or through the development of implementation tools to allow healthcare teams and patients tailor or prioritise recommendations in a way that still ensures that best practice is followed.

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Appendix 1: Examples of Evidence Synthesis Methods used in Health Services Research

METHOD	APPROACH	STRENGTHS	WEAKNESSES	SEMINAL TEXTS	CONTEXT	SETTING
Meta-Ethnography	Interpretative	Involves induction and interpretation and hence can generate higher level theories and understandings. Systematic approach – provides transparency Can include qualitative and quantitative evidence Possibly the most developed method with a growing number of examples	Lack of clarity on how to approach sampling and quality appraisal Slow and intensive process best suited to a team of experienced researchers	Noblit and Hare, 1998	Education and Healthcare	UK
Grounded Theory Synthesis	Interpretative	Can generate higher order categories and overarching concepts Encourages reflexivity from the researcher Applies 'like methods to like materials' Can include qualitative and quantitative evidence Sampling to theoretical saturation can limit the number of papers to review	Few examples as a synthesis approach Lack of clarity of the methods – Different variations have been reported, resulting in a lack of consistency Lack of clarity around quality appraisal	Glasser and Strauss, 1967 Kearney, 2001	Healthcare (Nursing)	UK

Realist Synthesis	Interpretative	Stakeholder driven, bridging gap between research and policy Explores systematically how, why and in what context complex interventions work Compatible with a wide range of mixed methods and multi-disciplinary evidence	Not standardised or reproducible No clear guidelines, hence not suited to inexperienced or independent researchers No clear guidance on quality appraisal Few published examples – lack of detail provided	Pawson, 2002 and 2006	Health care policy	UK/US/Canada
Meta-Narrative Synthesis	Interpretative	Can be used to assist policy makers by interpreting conflicting bodies of evidence	Not standardised or reproducible, lack of consistency Suffers from researcher subjectivity Lack of clarity around quality appraisal	Greenhalgh, 2004	Healthcare policy	UK
Narrative Synthesis	Interpretative	Has a guidance framework to follow, adding transparency and robustness to the method The method encourages a reflective and reflexive approach from the researcher Can add to the findings of meta-analyses	Still suffers from a level of researcher subjectivity	Popay et al, 2006 Rodgers et al, 2009	Public health	UK

Critical Interpretative Synthesis (CIS)	Interpretative	Provides the potential to generate new theories Provides a systematic approach for combining complex and diverse bodies of evidence Provides a flexible and iterative approach to developing the research question Provides an approach to quality appraisal Proven application in challenging and complex	No standardised method or data extraction Methods for sampling and quality appraisal are controversial	Dixon-Woods et al, 2006	Healthcare	UK, Europe, Canada, North America
Thematic Synthesis	Interpretative	Allows the use of computer software to manage data providing a clear audit trail Is flexible with a clear framework Allows the identification of clear themes and provides an organised way to manage the data under these themes	Lack of clarity around sample and quality appraisal Identifies prominent themes rather than generating new theories	Thomas et al, 2004 Thomas and Harden, 2008	Public Health	UK
Meta-study	Interpretative	Researchers can adopt different approaches to different stages of the synthesis	Time consuming and demanding process Best suited to a research team than an individual reviewer	Paterson et al, 2001	Healthcare	UK
Qualitative Cross Case Synthesis	Integrative	Systematic and transparent method using matrices to manage the data	Criticised for lack of interpretation No advice on sampling or appraisal Few examples	Miles and Huberman, 1994	Public health	UK, USA

Framework Synthesis	Integrative	Highly structured method for organising and analysing data using indexing and charts A pre-defined framework can be developed Software was developed to facilitate the process The creation of data displays lends itself to team working and transparency	Largely a deductive approach lacking in interpretation	Pope et al, 2000	Healthcare and healthcare policy	UK
'Best- Fit' Framework Synthesis	Interpretative and Integrative	A pragmatic approach appropriate to answering time sensitive questions Encourages the use of a conceptual framework from the outset Uses both integrative and deductive processes Published examples provide guidance to researchers Provides advice on quality appraisal and inclusion	May lack some of the interpretive abilities of other methods	Carroll et al, 2011 and 2013.	Healthcare and healthcare policy	UK

Appendix 2: Literature Review - Search Strategy

(1) Medline Search Strategy

#1	Models, Organizational [mh:noexp]
#2	Attitude of health personnel [mh:noexp]
#3	Leadership [mh:noexp]
#4	Organizational culture [mh:noexp]
#5	Organizational innovation [mh:noexp]
#6	Practice management [mh:noexp]
#7	Communication [mh:noexp]
#8	Information dissemination [mh:noexp]
#9	#1 or #2 or #3 or #4 or #5 or #6 or #7 or #8
#10	Primary health care [mh:noexp]
#11	General practice [mh:exp]
#12	General practice, dental [mh:exp]
#13	#10 or #11 or #12
#14	Guideline adherence [mh:noexp]
#15	Practice guidelines as topic [mh:noexp]
#16	Evidence based practice/organization and administration [mh:noexp]
#17	#14 or #15 or #16
#18	#9 and #13 and #17

(2) Cinahl Search Strategy

S19	S9 and S14 and S18	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL Plus
S18	S15 or S16 or S17	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL Plus
S17	MW evidence based practice	Limiters - Exclude MEDLINE records Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL Plus
S16	MW practice guidelines	Limiters - Exclude MEDLINE records Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL Plus
S15	MW guideline adherence	Limiters - Exclude MEDLINE records Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL Plus
S14	S10 or S11 or S12 or S13	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL Plus
S13	MW dentistry	Limiters - Exclude MEDLINE records Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL Plus
S12	MW dental practice	Limiters - Exclude MEDLINE records Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL Plus
S11	MW medical practice	Limiters - Exclude MEDLINE records Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL Plus

S10	MW primary health care	Limiters - Exclude MEDLINE records Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL Plus
S9	S1 or S2 or S3 or S4 or S5 or S6 or S7 or S8	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL Plus
S8	MW management	Limiters - Exclude MEDLINE records Narrow by Subject Major: - Change Management; Management;	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL Plus
S7	MW dissemination	Limiters - Exclude MEDLINE records Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL Plus
S6	MW communication	Limiters - Exclude MEDLINE records Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL Plus
S5	MW leadership	Limiters - Exclude MEDLINE records Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL Plus
S4	MW organi?ational culture	Limiters - Exclude MEDLINE records Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL Plus
S3	MW organi?ational change	Limiters - Exclude MEDLINE records Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL Plus
S2	MW attitude of health personnel	Limiters - Exclude MEDLINE records Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL Plus
S1	TX organi?ational models OR AB organi?ational	Limiters - Exclude MEDLINE records Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL Plus

Appendix 3: Literature Review - Review Inclusion Criteria

INCLUSION CRITERIA
Aim of study: Studies must explore either the structure, culture or management of primary care organisations in relation to knowledge translation.
Study design: Any design attempting to explore either structure, culture or management in relation to knowledge translation.
Study Outcome: Studies must demonstrate an attempt to measure knowledge translation in relation to either structure, culture or management. What is measured and how it has been done can be broad.
Study population/setting Primary care organisations. Organisations must relate to a team or centre that can be generalisable to general dental practice. No reason to limit to UK but differences between UK health services and other countries should be acknowledged.
Date of publication: Studies published at any time.
Language: Studies will not be restricted on/due to/ language.
Publication status: Published studies.

NOTES:

- Where the abstract of an article is not available, it should be sought unless it is absolutely clear from the title that the article is not relevant. If it is not clear from the abstract or if one member of the team is unsure whether it should be included, the full text should be sought.
- Editorials, opinion pieces or letters will be excluded from this review.
- Studies where the practitioner attends at the patients home/other setting rather than the patient attending at a primary care centre will be excluded as not transferrable to general practice and do not focus on the structure, culture or management of a primary care organisation.

Appendix 4: Literature Review - Example of Data Extraction Matrix

ID	AUTHOR	TITLE	JOURNAL/CITATION	YEAR	DESIGN	SETTING	PARTICIPANTS	COUNTRY	STUDY AIM/ PURPOSE	GUIDANCE AREA	BRIEF DESCRIPTION	QUALITY APPRAISAL	BARRIERS/ FACILITATORS
7	Albers-Heitner, P. et al.	Adherence to professional guidelines for patients with urinary incontinence by general practitioners: a cross-sectional study.	*Journal of Evaluation in Clinical Practice* 14 (2007) 807-811	2007	Cross-sectional study among GPs	General practice	GPs	The Netherlands	To assess the level of non/adherence of GPs to a specific urinary incontinence guideline (GLUI)	Urinary Incontinence Guidelines	A postal questionnaire sent to 949 GPs.	Yes	Barriers: lack of staff, time, diagnostic tools, skills/ knowledge, perceptions that patients don't see benefits of this care. Facilitators: local initiatives to improve implementation, delegation to nurses.
18	Watkins, C. et al.	General practitioners use of guidelines in consultation and their attitudes to them.	*British Journal of General Practice*, 1999, 49, 11-15	1999	Postal question-naire	General Practice	GPs	UK	To explore how GPs gain access to and use guidelines (inc. computer based guidelines) in day to day consultations with their patients and to identify the perceived problems and barriers to the use of guidance in such situations.	General Guidance	A postal survey of a randomly selected sample of 600 GPs from the register of those in practice in the South and West NHS Region was undertaken in 1996. The questionnaire was based on themes that emerged from a previous qualitative study. Analysis conducted in SPSS. 65% response rate.	Yes	Barriers: Not being able to find the guidance when needed, sex (females less likely to follow guidance – possibly due to working part-time). Facilitators: brevity, simplicity, ease of access, reputable source, quality, complexity of the problem, younger age, accessible format/language, physical form, guidance available online/incorporated into computer systems, credibility of guidance.

Appendix 5: Literature Review - Table of Included Papers

AUTHOR	TITLE	SETTING	DESIGN/METHODS	QUALITY APPRAISAL CHECKLIST COMMENTS
Truong, K. and Rosenthal, M.	Asleep at the wheel: Pharmacy practice research advocacy and knowledge translation by Canadian pharmacy organisations	Canadian pharmacy professional organisations	Persuasive letter of key messages (containing results of an RCT) sent to pharmacy regulatory bodies and professional organisations. Telephone interviews at 6 month follow up to determine any change in practice. Content analysis used to analysis interviews to identify main barriers to KT	No concerns.
Rashidian, A. and Russell, I.	Towards better prescribing - a model for implementing clinical guidelines in primary care organisations in the NHS	UK general practice	25 semi-structured in-depth interviews with GPs and primary care academics to develop a model of guideline implementation for prescribing in general practice. Analysed using the framework method.	No concerns.
O'Brien et al.	National guidelines for the management of diabetes mellitus: A nursing perspective.	Primary healthcare clinics in three state funded hospitals in South Africa	Qualitative, explorative, descriptive study. Semi-structured interviews conducted with registered nurses. Themes were identified using Tesch's method of data analysis.	No concerns.
Szeben, E.	Knowledge translation: the challenges in achieving evidence-based practice.	N/A	A review	No concerns.
Nemeth, LS. et al.	Implementing change in primary care practices using electronic medical records a conceptual framework	US general practice	A process evaluation 'piggy backing' onto a clinical trial. Semi-structured interviews with 28 participants from 8 Primary care practices already taking part in a clinical trial (managers, receptionists, clinical staff, nurses, medical assistants, physicians, nurse physicians); Guided by the 'Microsystems' conceptual framework.	Practices self-selected – could be considered early adopters.

Ricketts, T. et al.	Evaluating the development, implementation and impact of protocols between primary care and specialist mental health services	UK general practice and specialist mental health teams	Mixed methods. Semi-structured Interviews with participants involved in the development and implementation of protocols - managers, implementation leads and clinicians N= 30 (23 interviews in total). Information regarding the implementation and impact of the protocols was gathered from primary care and secondary care clinicians using a postal questionnaire. Grounded theory reduction analysis and descriptive quantitative analysis.	No concerns.
Albers-Heitner, P. et al.	Adherence to professional guidelines for patients with urinary incontinence by general practitioners: a cross-sectional study	General practice in the Netherlands	Cross-sectional postal questionnaire n= 949 GPs	No concerns.
Atun, AR. et al.	Introducing a complex health innovation - Primary health care reforms in Estonia (multi-methods evaluation).	Estonian primary care	Mixed methods. Interviews with those involved in policy design, development and implementation of primary health care reforms (N = 35) and a systematic review and documentary analysis. Developed using the framework designed by Hsiao and the WHO.	No concerns.
Balasubra-manian, BA. et al.	Using learning teams for reflective adaptation (ULTRA): Insights from a team based change management strategy in primary care.	US general practice (small independent primary care practices)	Multi-method assessment process. Qualitative data collection over a two week period (interviews, observations, field notes) with 25 practice members	No concerns.
Beune, EJA., et al.	Barriers and enablers in the implementation of a provider-based intervention to stimulate culturally appropriate hypertension education.	Primary health care centres in the Netherlands.	Data was collected from attendees of feedback meetings, (GPs (N=22), Nurse Practitioners (N=7) and GP Assistants (N=18)) regarding implementation of an intervention to enhance provider knowledge of the relationship between socio-cultural factors and patient beliefs and behaviours with respect to hypertension management. Analysed using thematic analysis	No concerns.

Ackermann, SP. et al.	Factors affecting physician adherence to breast cancer screening guidelines	US studies only	Literature review (of)included all studies of breast and cervical cancer screening from the years 1985 to 1990, using meta-analysis. Included 13 studies.	No concerns.
Carsen, B. et al.	Thou shalt versus thou shalt not: a meta-synthesis of GPs attitudes to clinical practice guidelines	Restricted to studies involving GPs	Systematic review and meta-synthesis of qualitative studies. 12 studies included.	No concerns.
Cullen, W. et al.	Guidelines for the management of hepatitis C in general practice: a semi-qualitative interview survey of GPs views regarding content and implementation	Irish general practice	Semi-structured interviews with GPs prescribing methadone in Dublin (N= 14)	Small sample, but equivalent to 10% of the total prescribing methadone at the time the guidelines were developed. Results seemed lacking in some detail.
Smith, L. et al.	Clinical guidelines on depression: A qualitative study of GPs views	UK general practice (Scotland and NE England)	In-depth interviews with 11 GPs (who had taken part in a previous study) Questions were open-ended and semi-structured. The framework technique was used for analysis.	Small sample size, but saturation reported.
Doran, T. et al.	Obstacles to influenza immunisation in primary care	UK general practice	A semi-structured questionnaire survey of general practice groups in Salford and Trafford in 1997 - 1998. 236 GPs from 104 Practice Groups. The questionnaire was posted to practices for completion by the person responsible for organising influenza immunisations. Data analysed and summarised using SPSS and Excel.	No concerns.
Heneghan, C. et al.	Hypertension guideline recommendations in general practice: awareness, agreement, adoption and adherence.	UK general practice	Questionnaire survey to GPs via the internet. (GPs). Questionnaire sent to 800 GPs, 401 were returned. Questionnaire was adapted from the original 4 steps of the awareness-to-adherence questionnaire by Pathman et al. Questions were based on 7 recommendations from the NICE and BHS guidelines	No concerns.

McColl, E. et al.	Barriers to improving endodontic care: the views of NHS practitioners	UK general dental practice	In-depth interviews with 12 dentists following a questionnaire survey, which was reported elsewhere. Interviews covered 6 general topics aiming to focus on factors influencing practice but also dentists' experience, current behaviour and criteria for successful treatment. The framework approach to analysis was undertaken.	Small sample size, but saturation reported.
Watkins, C. et al.	General practitioners use of guidelines in the consultation and their attitudes to them.	UK general practice	A postal survey of a randomly selected sample of 600 GPs from the register of those in practice in the South and West NHS Region. The questionnaire was based on themes that emerged from a previous qualitative study. Analysis conducted in SPSS. 65% response rate.	No concerns.
Flower, KB. et al.	Using body mass index to identify overweight children: barriers and facilitators in primary care	US primary care	Focus groups with 38 pediatric care participants across 6 practices.	No concerns.
Weiner-Ogilvie, S. et al.	Do practices comply with key recommendations of the British Asthma Guideline? If not, why not?	UK general practice (Scotland, NHS Borders)	Practice audit and questionnaire survey to 15 general practices. Questionnaire was sent to 66 GPs and 18 practice nurses.	Quite a limited population - practices in NHS Borders only, although they do suggest that preliminary work carried out in NHS Borders echoes asthma care across Scotland as a whole.
Daniels, EC. et al.	Translation squared: Improving asthma care for high-disparity populations through a safety net practice-based research network.	US community health centres	RCT conducted in 8 community health centres (only 7 completed the study).	No concerns.
Espelan, A. et al.	Factors affecting general practitioners' decisions about plain radiography for back pain: implications for classification of guideline barriers - a qualitative study.	General practice in the Netherlands and US	Focus group interviews regarding factors affecting ordering decisions with a diverse sample of Norwegian GPs. Results of this study, and two other qualitative studies from the Netherlands and the USA on the use of spine radiography, were interpreted for barriers to guideline adherence.	No concerns.

Greving, JP. et al.	Physicians attitudes towards treatment guidelines: differences between teaching and non-teaching hospitals.	Hospitals in the Netherlands	Questionnaire survey to General Internists and Cardiologists in 5 hospitals, N= 54 Physicians at T1 and N= 90 at T2. Questionnaires were distributed twice within the study period, shortly before and 4 years after the introduction of joint treatment guidelines. Response rate at T1 52%; Response rate at T2 56%.	No concerns.
Miller, PM. et al.	Initial steps taken by nine primary care practices to implement alcohol screening guidelines with hypertensive patients: The AA-TRIP Project.	US general practice	Qualitative data recorded from meetings in 9 primary care practices.	No concerns.
Carlsen, B. et al.	What lies beneath it all? An interview study of GPs' attitudes to the use of guidelines	General practice in Norway	6 semi-structured group interviews with a purposive sample of 27 Norwegian GPs. The interview guide covered aspects such as, what characterises good guidelines, trust in evidence and the guidelines, barriers, how guidelines influence professional autonomy and relationships with patients. Thematic analysis was undertaken.	No concerns.
Harrison, P. et al.	Practice nurses and clinical guidelines in a changing primary care context: an empirical study.	UK general practice	Interviews were conducted with a sample of 29 practice nurses three times during a 16 month period, this data was compared with equivalent responses from GPs in the same practices and with data from a linked audit study.	No concerns.
Hickling, J. et al.	Barriers to detecting and treating hypercholesterolemia in patients with ischemic heart disease: primary care perceptions.	UK general practice	Qualitative study in 10 practices using the nominal group technique. All GPs and practice nurses were invited to a meeting at each practice, practice data was presented to each group and then a nominal group process was conducted to elicit the barriers that clinicians perceived limited the testing for and treatment of hypercholesterolemia in their own patients with ischemic heart disease.	No concerns.

Jackson, L. et al.	Family physicians managing tuberculosis: Qualitative study of overcoming barriers.	Private practices, community health centres and family practice units in hospitals in Canada	Focus groups with family physicians and specialists working in difference practice settings. 15 participants took part in total across 3 focus groups.	No concerns.
Kasje, WN. et al.	Specialists' expectations regarding joint treatment guidelines for primary and secondary care	Departments of Cardiology and Internal Medicine in three Dutch hospitals.	7 Focus groups held with specialists at 3 different hospitals, discussing different disease topics for which guidance for transmural care were being developed. General internists N=10, Cardiologists N=11 Gastroenterologists N=6	No concerns.
Park, S. et al.	A survey of practice preferences and attitudes to the New Zealand guidelines for the management of heavy menstrual bleeding.	General practice in New Zealand	Postal Survey to GPs (N=531), specialist gynaecologists (N= 194), and family planning association doctors (N=69).	No concerns.
Partridge, M. R.	Translating research into practice: how are guidelines implemented?	N/A	Discussion paper	No concerns.
Moffat, M. et al.	Poor communication may impair optimal asthma care: a qualitative study.	UK general practice (NE Scotland)	Interviews and Focus Groups, with GPs and Practice Nurses. N=54. Analysed using grounded theory.	No concerns.
Hobbs, RFD. et al.	Acceptance of guideline recommendations and perceived implementation of coronary heart disease prevention among primary care physicians in five European countries: the Reassessing European Attitudes about Cardiovascular Treatment (REACT) survey.	Primary care physicians in France, Germany, UK, Italy and Sweden.	Interviews with 150 GPs using pre-determined semi-structured questions> Interview questions covered perceived need, use and usefulness, extent and barriers to implementation of the guidelines.	No concerns.

Marshall, JL. et al.	The implementation of venous leg ulcer guidelines: process analysis of the intervention used in a multi-centre, pragmatic, randomised, controlled trial.	UK general practice	Two group interviews took part in 13 practices to explore practitioners' attitudes to and perceptions of the guidelines, audit and critical appraisal training they had been provided. Thematic analysis was undertaken.	This paper presents only the qualitative results of a larger study but, as a result, the numbers of participants, the breakdown of participants by role and how participants were selected is not clearly reported.
Mitchell, C. et al.	Impact of the QOF and the NICE guideline(s) in the diagnosis and management of depression: a qualitative study.	UK general practice	4 focus groups undertaken with multidisciplinary teams from 4 practices in South Yorkshire. GPs, nurses, doctors in training, mental health workers and a manager (N=38).	No concerns.
Langley, C. et al.	Use of guidelines in primary care – practitioners' perspectives	UK general practice	Semi-structured interviews with GPs. Initially 5 interviews were undertaken, some recent examples of guidelines were used to elicit comments on the content, presentation and their practical usefulness. Then a further 15 interviews were carried out with the same interview schedule as well as themes that emerged from the original 5 interviews. A grounded theory approach was utilised.	No concerns.
Lugenberg, M. et al.	Guidelines on uncomplicated urinary tract infections are difficult to follow: perceived barriers and suggested interventions	General practice in the Netherlands	One focus group with GPs N=13.	Small sample size.
Legare, F. et al.	Primary health care professionals' views on barriers and facilitators to the implementation of the Ottawa Decision Support Framework in practice	Canadian primary care	13 focus groups with primary health care professionals. 118 participants in total. Comprised physician educators with clinical responsibilities and residents from family practice teaching units. Analysed using content analysis.	No concerns.

Wiener-Ogilvie, S. et al.	Practice organisational characteristics can impact on compliance with BTS/SIGN asthma guideline(s): Qualitative comparative case study in primary care.	UK general practice (Scotland)	Comparative case study comprising 9 in-depth interviews and 2 focus groups with GPs and practice nurses.	No concerns.
Williams, B. et al.	General Practitioners' reasons for the failure of a randomised controlled trial (The TIGER Trial) to implement epilepsy guidelines in primary care.	UK general practice (Scotland)	Focus groups and one in-depth interview in general practice (N=13 practices). Focus groups included GPs, practice nurses and practice managers (N=22 GPs, 12 Nurses and 13 Practice Managers).	No concerns.
Veldhuijzen, W. et al.	Characteristics of communication guidelines that facilitate or impede guideline use: a focus group study.	General practice in the Netherlands	7 focus groups were conducted with experienced GPs, communication trainers (GPs and behavioural scientists) and communication learners (GP trainees and medical students). 3 focus groups were conducted with groups of GP trainees only.	No concerns.
Henke, R. et al.	Clinician and organisational level factors in the adoption of evidence based care for depression in primary care.	US primary care	This study involved a baseline clinician survey as well as two patient surveys.	No concerns.
Stone, T. et al.	Guideline attribute and implementation preferences among physicians in multiple health systems	US primary care	Semi-structured telephone interviews with Physicians (N=500). Uses Lewin's 3 stage theory to explain why practices do or do not manage to implement guidance.	No concerns.
Dosewell, G.et al	Clinical guidelines: attitudes, information processes and cultures in English primary care	UK primary care	Latin Square Design - two Health Authority districts each served as the locus of active implementation of one guideline whilst serving as the control for the other.	No concerns.

Francke, AL. et al.	Factors influencing the implementation of clinical guidelines for health care professionals: A systematic meta-review	N/A	Meta- review. Searched 5 literature databases and one website to find relevant existing systematic reviews or meta-reviews.	No concerns.
Cranney, M. et al.	Why do GPs not implement evidence-based guidelines? A descriptive study	UK primary care	Semi-structured interviews conducted during focus group outreach visits to 34 GPs from 9 practices involved in an educational programme designed to improve the management of hypertension in the elderly.	No concerns.
Hroscikoski, MC. et al.	Challenges of change: A qualitative study of chronic care model implementation	US primary care clinics	Qualitative comparative case studies of 5 practices using semi-structured interviews. Organisational leaders, external and internal change leaders, midlevel clinic managers, admin clinic leaders, front-line physicians and nurses were interviewed (N=53).	No concerns.
Ouimet, M. et al.	What factors induce health care decision makers to use clinical guidelines? Evidence from provincial health ministries, regional health authorities and hospitals in Canada.	Decision makers in health ministries, health authorities and hospitals in Canada	Questionnaire to decision makers in health ministries, health authorities and hospitals N=899.	No concerns.
Gabbay, J. and Le May, A.	Evidence based guidelines or collectively constructed mindlines? Ethnographic study of knowledge management in primary care	UK general practice	An ethnographic study in two general practices in England, (one North and one South), to explore how primary care practitioners use guidance in their day to day decisions about the management of patients both at an individual level and in their collective discussions and how these interact. (N=9 GPs; 3 Nurses; 1 Phlebotomist and various associated medical staff.	No concerns.
NHS Centre for Reviews and Dissemination	Effective Health Care: Implementing clinical practice guidelines.	N/A	A review paper.	No concerns.

Cabana, MD. et al	Why don't physicians follow clinical practice guidelines? A framework for improvement	N/A	A systematic review of the barriers to physician adherence to clinical practice guidelines.	No concerns.
NHS Centre for Reviews and Dissemination	Effective Health Care: Getting evidence into practice	N/A	A review paper.	No concerns.
Spallek, H. et al.	Barriers to implementing evidence based clinical guidelines: a survey of early adopters.	US general dental practice	A cross-sectional questionnaire to identify the barriers that early adopting dentists perceive as common and challenging when implementing recommendations from evidence based clinical guidelines. Participants were dentists who had attended an evidence based dentistry conference (N=127). There was a 34% response rate.	No concerns.
Lugtenberg et a.l	Perceived barriers to guideline adherence: a survey among general practitioners	General practice in the Netherlands	Cross-sectional electronic survey sent to 703 GPs exploring the perceived barriers to guideline adherence. 38% response rate.	No concerns.
Lugtenberg et al.	Why don't physicians refer to guideline recommendations in practice? An analysis of barriers among Dutch GPs.	General practice in the Netherlands	6 Focus Groups comprising 30 GPs discussing the barriers to the implementation of the key recommendations derived from 12 national guidelines (each focus group focused on 2 guidance topics). Focus group data was analysed using an existing framework.	No concerns.
Grol, R. and Grimshaw J.	From best evidence to best practice: effective implementation of change in patients' care	N/A	An overview of present knowledge and thinking about approaches to changing medical practice, focusing on three issues influencing the uptake of guidance: attributes of evidence, barriers and facilitators to changing practice and effective dissemination and implementation strategies.	No concerns.

Appendix 6: Dental Team Interviews - Recruitment Protocol

Aim of the interviews: To explore the organisational characteristics of dental practices and how this influences the translation of clinical guidelines.

Method: Telephone interviews.

Setting: General Dental Practices participating in the Decontamination RCT.

Participants: Dental team members.

Sample: 4 dental practices (2 high compliance; 2 low compliance); Around 3-4 members per practice, but would like to speak to a range of the roles provided within each practice to ensure getting full representation.

RECRUITMENT PROCEDURE:
131 dental practices that took part in the TRiaDS Decontamination RCT were ranked in terms of compliance with 13 key behaviours identified in the SDCEP Decontamination guidance. Data collected at the trial 12-month point were used for this process. Practices were considered to be compliant with a behaviour if they reported that they 'always' carried it out. Practices were ranked in terms of the number of behaviours they were compliant with, and so each practice was given a score of between 0 and 13.

Once ranked in order based on this scoring, the top 10% (N=13) and the bottom 10% (N=13) of the sample were selected and sent a study information pack inviting them to participate in the interviews. Recruitment packs will be sent to the contact dentist for the Decontamination RCT.

The researcher will be blinded to the compliance level of the practice. Randomisation within the sample practices (N=26) will be undertaken by an experienced researcher within the TRiaDS office.

The researcher will be provided with a sample of 4 practices (2 high compliance; 2 low compliance) to contact in the first instance. 1-2 weeks after the recruitment packs are mailed, the researcher will contact these 4 practices by telephone to see if they are willing to participate. If willing, the researcher will identify a sample of dental team members to interview; ideally, including a range of roles within the team for example: a principal dentist, a dental nurse, a practice manager/receptionist, plus one other such as a VT, a recently qualified dentist or a hygienist-therapist.

If not willing to participate, the researcher will advise the TRiaDS office and a further practice ID will be provided to contact. This process will continue until the researcher has recruited 2 practices of high and 2 of low compliance.

Interview dates will be arranged at a convenient time to the practice and the dental team members. If during the course of the interview, another member of the dental team is mentioned who is not already due to take part in an interview, the researcher will explore whether it would be possible to interview them also, if appropriate. At the end of each interview, the researcher will explore whether there is anyone else within the practice team that they think it would be appropriate to be interviewed. If so, the interviewer will explore whether that is possible.

Appendix 7: Dental Team Interviews - Interview Schedule

Interviewer:

Name and Address of Dental Practice:

Contact Telephone No./ Email Address:

Name of participant:

Job title/role*:*

Date of interview*:*

Discussion checklist:

Firstly, thank them for taking part in this PhD study.

- Researcher and study introduction – advise not a clinician; CSO Research Fellow conducting a PhD to explore the impact of organisational level factors on the implementation of guidance.

- Aim of the interview: *To explore the organisational characteristics of dental practices and how this influences the translation of clinical guidelines into practice.*
- Practicalities / timescales:
    - brief list of questions by telephone ~ approx. 30 minutes
    - interviewer taking written notes and recording
- Assurance of confidentiality

(A) DEMOGRAPHICS

1) Before we start the interview, it would be helpful if you could answer some general questions for me:
    a) Is your practice fully NHS?
    b) Do you use a paper or computer based recording system in your practice?
    c) How many members of staff are there within the dental team (clinical and non-clinical)?
    (try to get a list of all roles within the team, if not mentioned ask if there is a practice manager and are they f/t or p/t)
    d) Are you a vocational training practice?
    e) How long have you been in post/practice/owned this practice?
    f) What methods to you use to keep in touch with your patients?
    e.g. paper, phone, text messages, do they have a practice Facebook page, Twitter account?

(B) GUIDELINE GENERAL VIEWS & AWARENESS –
What I'm going to do now is just ask a couple of questions about your general views, awareness and use of clinical guidelines...

1) SDCEP produce dental clinical guidance documents and have published 4 in the last 12 months. How aware are you of any of these? *(OHA, Mar 2011; Bisphosphonates, Apr 2011; Drug Prescribing 2, Aug 2011; Sterilization, Feb 2012)*
2) How do you find these documents to use? *useful/helpful/easy to implement? Why?*
3) Are there any specific SDCEP guidance documents that you routinely use/refer to? *If so, why? If not, why?*
4) Are there any other guidance documents that you routinely use/refer to? *If so, why?*

(C) BARRIERS/FACILITATORS TO GUIDANCE IMPLEMENTATION –
Can we now talk about the specifics of what happens in your practice when a new guidance document is published?

1) LEADERSHIP
- Do you know what/Can you tell me/ what happens when a new guidance document is published, how would you normally become aware of it?
- What would be the next steps that would typically be taken in your practice?
- What part would you play in this process?
- Who would typically initiate action around this guidance document?
- There is a lot of interest around leadership. In your practice, who would you identify as a leader?
- Are there any other members of the team providing leadership?
- How do you keep abreast of new guidance and disseminate this within the practice?

2) ENVIRONMENTAL PRESSURE
- What are the factors that enable you to implement guidance in your practice?
- Are there any aspects of health care policy or wider policy or economic issues that influence whether you follow guidance in your practice?
- Can you give an example of when you were able to implement a guidance document/Quality Improvement (QI) initiative/new recommendation?
- Can you give an example of when you were not able to?
- What do you consider to be the main barriers to implementing new guidelines? *(Prompts: time, resources, equipment, staff, training?)*
- Do you think that patients play a role in encouraging your practice to implement guidance? *Ask for examples?*

3) ORGANISATIONAL CULTURE
- How would you describe the nature of your practice?

(Prompts – motivated? innovative? involved in a lot of training? large/corporate? small/intimate? friendly? well organised?)

- Do you have an appraisal system for staff in the practice? *Or one-to one meetings, professional development discussions, goal setting?*
- How much training are you able to participate in? *What types of training – team based, individual, are you provided with protected learning time? What about training for other members of the team?*

4) RELATIONSHIPS

Within the Dental Team:

- What methods/types of communication do you feel work well in your practice? *(Prompts – regular team meetings, ad hoc discussions, case studies, scenarios, review of protocols, team based learning, other?)*
- Are there any aspects of communication within your practice that could be improved?
- Can you tell me about a typical week in your practice in terms of how often you would meet/communicate/have team briefings etc.
- In your opinion what characteristics of your team work well?
- What characteristics of your team work could be improved?
- Have there been any changes in how your team work together over time? *Ask for examples?*
- How are roles distributed within your team? *e.g. do people have responsibilities for specific areas?*
- How has this changed over time?

With Patients:

- How would you describe your patient profile?
- Are there any specific issues that arise due to the spectrum of patients you see? *Describe? Ask for examples?*

5) QUALITY AND COHERENCE OF POLICY/SIMPLICITY OF GOALS AND PRIORITIES

- In terms of the format of guidance documents, what would be your preferred format? *(e.g. paper-based, electronic?)*
- Are you aware of any new technologies which may facilitate the implementation of guidance in your practice? *e.g. Apps? If so, have you used any? Which ones? How? Mobile Phone, iPad etc.?*
- Does where the guidance has come from/who has developed it, make any difference as to whether you would implement it? *Ask for examples? Local guidelines, national level, professional bodies, endorsement from CDO?*
- Do you feel sufficiently involved in the development of guidance?
- Do you feel there is an appropriate level and frequency of guidance?
- What factors might make using guidance easier and more useful for your decisions?
- What factors make using guidance harder and less useful for your decisions?

- Can you give me an example of a recent guidance that you feel is of relevance to your practice? Have you made efforts to implement it?
- Has there been any recent guidance you have chosen to ignore? If so, w*hy?*

6) EXTERNAL INFLUENCES

- In your day-to-day practice which other organisations do you interact with?
- Do you feel your links with these other organisations impact upon your ability to follow guidance?
  (e.g. specialist skills, referral services – thinking about access to LDU if not on site, child neglect referral, hospital referral). In what ways? Ask for examples?

(D) GENERAL QUESTIONS –

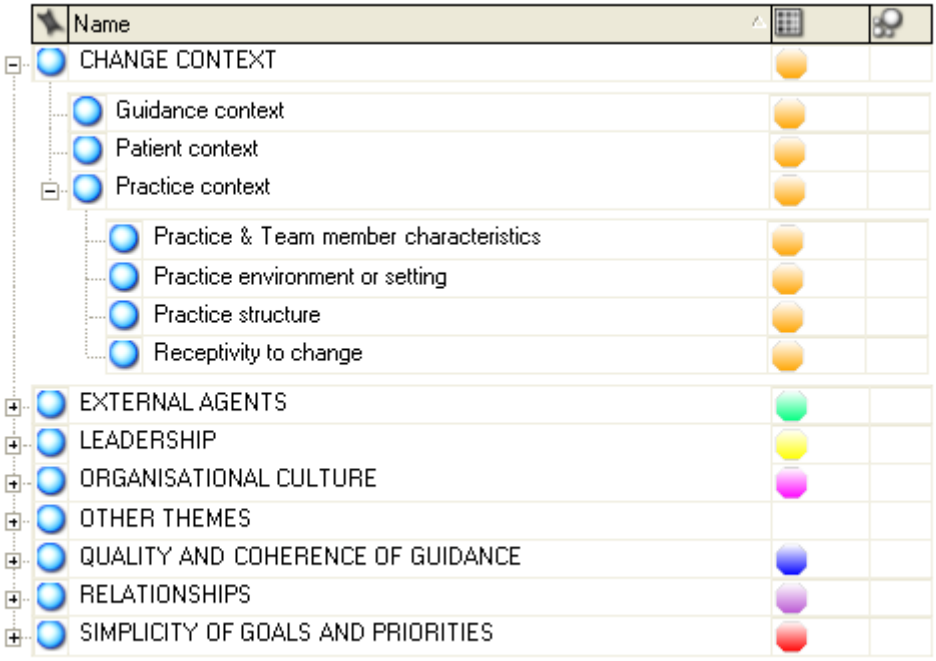
I'm now going to finish off with some general questions…

1. Are there any other barriers you have encountered to improving your practice that we have not already covered?
2. Are there any other facilitators you have encountered to improving your practice that we have not already covered?
3. Reflecting on your practice over the last 12 months, what (intervention/s) do you think have had the biggest impact in terms of improving quality of care and patient safety?
4. What role, if any, do you think guidance has had in improving quality of care and patient safety?
5. How do you know that these interventions are having an impact? *Do they collect data/undertake audit and feedback?*

Are there any other issues that strike you as important in terms of patient safety?
Any other comments?

Appendix 8: Interview Analysis Indexing System

Framework Headings



Appendix 9: Dental Team Interviews - Example of Applying the Text

Reference 1 - 1.50% Coverage

I: I think generally our patients are very grateful of the service we provide, been coming to the practice for a long, long time and occasionally people say they'd rather come here and get the operation than elsewhere, you know so, I mean I think the patients are generally very appreciative of the service that we provide, and … you know I mean obviously there's certain people you can never please, but … generally I think that they're quite happy with the service that we provide

Reference 2 - 0.98% Coverage

I: Well we've got, we don't implants use so, we don't have, patient, enough patient, eh patients, I mean we're in a, we're not in an area where we can provide that service and, and, because patients can't pay for it basically [sure] at the end of the day, so I would say we are, we are a motivated NHS practice

Reference 3 - 3.01% Coverage

I: Patient profile, personally it, NHS. [slight pause] Varying social, economic groups, we've quite a varying because of the position of where we are [OK], patients, some patients travel for some distance [OK], to come to us

I: It's a mixture, as I say I personally probably have the fewer …

I: … children in the practice, so I do have children, and you know I've got patients of all ages otherwise in that and then obviously in all different states of health as well …

Appendix 10: Questionnaire Pilot - Invitation Letter

Dear (Dentist name)

Improving Quality in Healthcare: A Case Study in Dental Primary Care in Scotland

Thank you for agreeing to become a Rapid Evaluation Practitioner (REP) with SDPBRN. As you know this role provides you with the opportunity to use your expertise to inform important aspects of practice and policy.

Working in collaboration with the Scottish Dental Clinical Effectiveness Programme (SDCEP) we are inviting your practice to take part in a study to explore how the organisational characteristics of general dental practices in Scotland influence the implementation of guidance. The aim is to facilitate the implementation of SDCEP guidance by informing the development of appropriate support tools and education for general dental practice.

Full details are given in the accompanying information sheet but essentially the study will involve yourself and your dental team completing a questionnaire and then providing feedback on its content and clarity. Feedback can be given either face-to-face or over the telephone. Given that this piece of work involves your whole dental team we are offering a payment of £50. If this is the first REP project you have taken part in, you will also receive your introductory REP payment of £270.

Taking part in this study will give you an opportunity to inform the development and implementation of dental clinical guidance and we hope you will feel able to help. A researcher, will contact your practice during surgery hours at the start of January to ask whether your practice is willing to participate.

Before then, if you would like more information or if you would prefer not to take part on this occasion, please do not hesitate to contact Heather Cassie. Tel: 01382 740954; Email: h.c.cassie@dundee.ac.uk or Email: sdpbrn@nes.scot.nhs.uk

Yours sincerely,

Heather Cassie
CSO Research Fellow

Linda Young
Research & Development Manager
SDPBRN

Appendix 11: Pilot Questionnaire - Information Sheet

Improving Quality in Healthcare: A Case Study in Dental Primary Care in Scotland

Background
Working in collaboration with the Scottish Dental Clinical Effectiveness Programme (SDCEP), the Scottish Dental Practice Based Research Network (SDPBRN) aims to improve the quality of the dental health of patients in Scotland. One piece of work that SDPBRN is facilitating is an exploration of the influence that organisational characteristics have on the implementation of guidance in general dental practice.

Why is this study being carried out?
Research suggests that organisational factors may influence the translation of clinical guidance. These organisational factors have not been investigated within a general dental setting. In order to address this, a questionnaire has been developed to explore organisational characteristics in dental practices. This study is being undertaken to ensure the questionnaire appears clear, relevant and is straightforward for all members of the dental team to complete. The project is being led by Heather Cassie and overseen by Professor Jan Clarkson and Dr Linda Young.

How will the study findings be of benefit?

- By participating in this study you will be informing the development of a national survey to investigate the influence of organisational factors on the implementation of clinical guidance in practice.
- The findings of this survey will contribute towards the development of dental clinical guidance and inform the development of appropriate support tools and education for dentists and their dental teams in general practice.

What will it involve?
If you agree to take part, your dental team will be asked to complete a questionnaire, this should take no longer than 25 minutes. Following completion of the questionnaire, practice members will be asked to provide feedback on the questionnaire, this can be done either face-to-face or over the phone at your convenience. Questionnaires will be sent to a nominated person within your practice, who will be responsible for distributing these to team members. When completed, that nominated person will be asked to return them in a freepost envelope which will be provided.

Confidentiality
All data will be managed according to the Data Protection Act 1998. The confidentiality of your data is of prime consideration in this study and all information will be held in the strictest confidence. It will not be possible to recognise you or your practice from any report or publication arising from the study.

How will the results of study be used?
Questionnaire data and information received in the feedback session will be analysed and findings used to inform any revisions to the questionnaire and how it is disseminated. The findings may also be published in a peer reviewed journal and will form part of an SDCEP researcher's PhD thesis.

Who can I contact if I have any questions?
If you have any questions or would like to discuss any aspect of the study in greater detail, please contact Heather Cassie. Tel: 01382 740954; Email: h.c.cassie@dundee.ac.uk

Thank you for taking the time to read this information sheet

Appendix 12: Pilot Questionnaire - Feedback Session Topic Guide

Improving Quality in Healthcare: A Case Study in Dental Primary Care in Scotland

Discussion Topics for Feedback Sessions:

Thank the practice for taking part in the pilot and completing the questionnaires. Ask if anyone has any questions about the pilot and the questionnaire before I go through a list of key topics I would like to cover. Advise that there will be time at the end for further comments/discussion.

Section 1:

- Any aspects of the wording of questions that did not make sense/were unclear?
- How did the scale 1-4 work (without a mid-point)?
- Did the terminology used to describe team members make sense e.g. principal dentist, senior team members? Was it clear who to refer to?

Section 2:

- Any aspects of the wording of questions that did not make sense/were unclear?
- How did the scale (always, sometimes, never, don't know) work?
- Were the whole team comfortable answering these questions in relation to the whole practice?

Section 3:

- Any aspects of the wording of questions that did not make sense/were unclear?
- Did Q1 cover all roles? Any roles missing or not appropriate?
- Was Q2 clear that you should put a zero in the boxes where there were no team members in that role?
- Where there any questions missing in terms of the practice demographics?

General Feedback:

- Did the distribution method of sending to one person in the practice work?
- Was it clear that all questionnaires were to be sent back together in the big envelope provided?
- How long did it take to complete?
- If your practice received these questionnaires in the mail (without warning) what would make you complete it?
- Any other comments?

Appendix 13: Pilot Questionnaire - Practice Feedback Summary

Improving Quality in Healthcare:

Dental Team Questionnaire Summary Findings

PRACTICE NAME: EXAMPLE

Background:

Research suggests that organisational factors may influence the implementation of clinical guidance. These organisational factors have not been investigated within a dental setting. This study has explored the influence that organisational characteristics have on the implementation of guidance in dental practice. The findings will contribute towards the development of dental clinical guidance and inform the development of appropriate support tools and education for dental teams.

Introduction:

Thank you for participating in this study. A summary of your practice's responses are provided inside. The results are based on average scores of the team members within your practice who completed the questionnaire. You will notice that questions covering autonomy, tradition and involvement are not covered in this results summary. This is due to a very low response rate to these questions and changes to the wording of these questions have been made for the full survey.

In order for practice members to be accredited three hours of verifiable CPD, they must attend a practice meeting where you discuss these findings and identify five areas for development. These five areas are entirely at the discretion of the team. It may be helpful to refer back to the questionnaire when interpreting your results, therefore a blank copy of the questionnaire is enclosed. Although the results highlight the categories in which you scored highest and lowest, please bear in mind that a low percentage does not necessarily indicate areas that should be addressed, this will very much depend on the individual practice.

Feel free to use the back of this booklet to make notes for your own reference. Please return the enclosed practice meeting register with your five development points listed in the FREEPOST envelope provided.

Practice Information:

Five members of your dental team participated in this study*. Your practice is **independently owned** and undertakes a **mixture of NHS and private treatment.** In your practice you **do** have a Practice Manager and you **do** have a computerised patient management system.

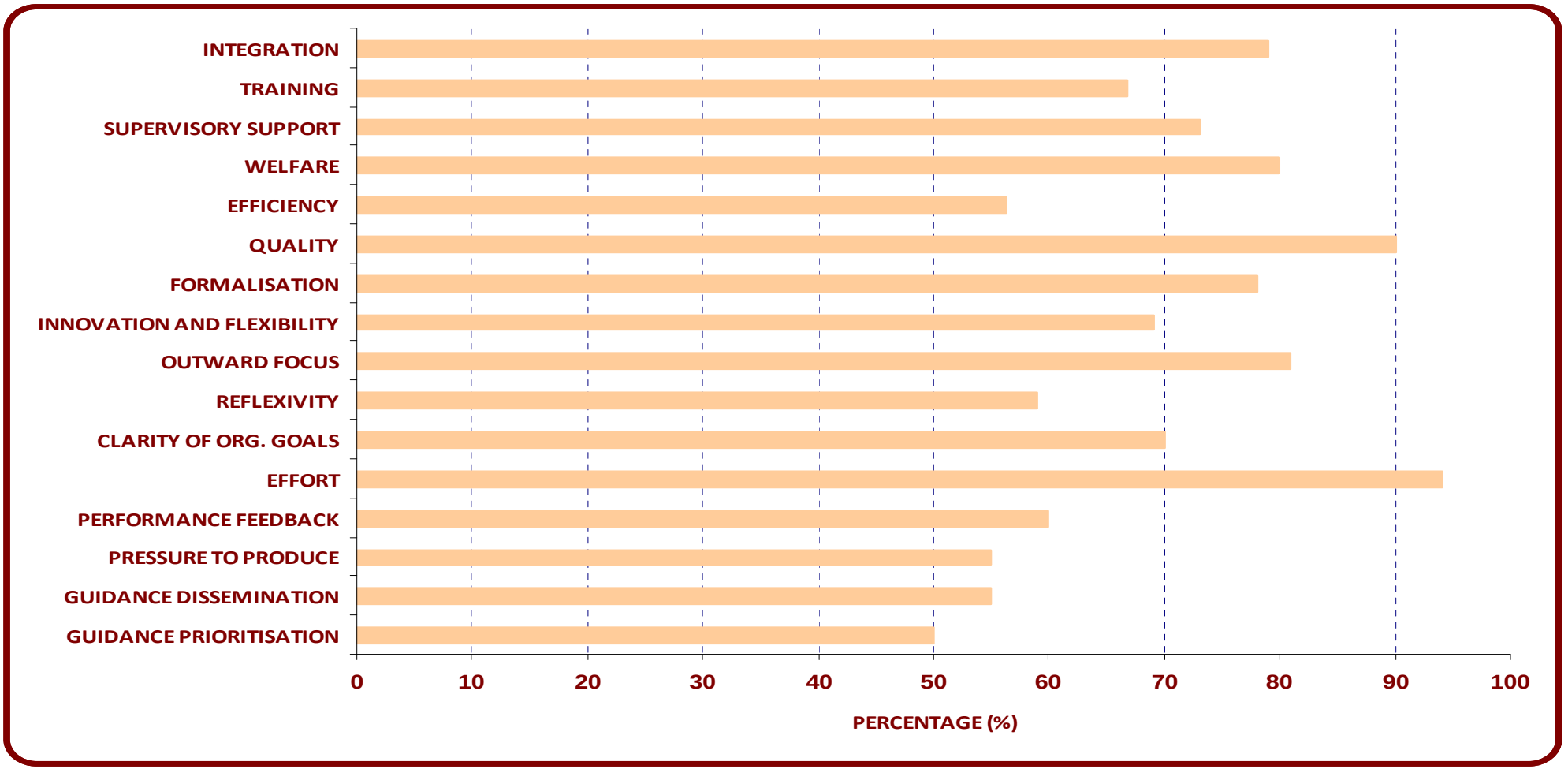
Category Definitions:

INTEGRATION: The extent of trust and co-operation between team members
TRAINING: There is a focus on developing team member's skills
SUPERVISORY SUPPORT: Team members experience support and understanding from their immediate supervisors
WELFARE: The extent to which the dental practice values and cares for team members
EFFICIENCY: The degree of importance placed on efficiency and productivity
QUALITY: The emphasis the team places on quality of care
FORMALISATION: The degree of importance placed on formal rules and procedures
INNOVATION & FLEXIBILITY: The extent of orientation towards change, and new and innovative approaches
OUTWARD FOCUS: The extent to which the practice is responsive to the needs of the patient
REFLEXIVITY: There is a focus on reviewing and reflecting upon practice objectives and procedures
CLARITY OF ORGANISATIONAL GOALS: The practice goals are clearly defined and communicated
EFFORT: How hard team members work towards achieving goals
PERFORMANCE FEEDBACK: The extent to which job performance is measured and fed back to team members
PRESSURE TO PRODUCE: The level of pressure team members face to meet targets
GUIDANCE DISSEMINATION The extent to which new guidance and recommendations are communicated to team members
GUIDANCE PRIORITISATION The extent to which new guidance and recommendations are prioritised by team members

* Only data from participants who completed 75% or more of the questionnaire are included in the study findings.

Results:

The graph below shows an average score for each area based on those who completed the questionnaire:



Your practice scored highest in the areas of **effort, quality** and **outward focus**. You scored lowest in the areas of **guidance prioritisation, guidance dissemination** and **pressure to produce.**

The tables below indicate the number of responses to each question on the use of guidance in your practice:

Emergency Dental Care:

If a patient contacts the practice…

a.	with a dental problem asking for emergency or unscheduled attention, there is a procedure that is followed	5	Always		Sometimes		Never		Don't Know		n/a
b.	when it is closed there are arrangements in place for them to obtain care	5	Always		Sometimes		Never		Don't Know		n/a
c.	complaining of dental trauma, a clinician will contact with the patient, either face to face or by telephone within 60 minutes	4	Always		Sometimes		Never	1	Don't Know		n/a
d.	complaining of facial swelling a clinician will contact with the patient, either face to face or by telephone within 60 minutes	4	Always		Sometimes		Never	1	Don't Know		n/a

Oral Health Assessment & Review:

As part of a routine examination in this practice…

a.	a head and neck assessment is recorded for all **new** patients	4	Always		Sometimes		Never	1	Don't Know		n/a
b.	caries and restorations are recorded for all **new** patients	4	Always		Sometimes		Never	1	Don't Know		n/a
c.	a risk-based recall interval is assigned for all patients	5	Always		Sometimes		Never		Don't Know		n/a
d.	a long term personal care plan is written for **all** patients	3	Always		Sometimes		Never	1	Don't Know		n/a

Drug Prescribing:

If a patient presents with a dental abscess, with no obvious signs of spreading infection, in the first instance…

a.	the patient is treated with local measures	2	Always		Sometimes		Never	3	Don't Know		n/a
b.	the patient is prescribed a first line antibiotic	1	Always	1	Sometimes		Never	3	Don't Know		n/a
c.	the patient is prescribed a second line antibiotic		Always	1	Sometimes	1	Never	3	Don't Know		n/a

Please note that where numbers do not total 5, this is due to questions that have been left blank or were illegible.

Notes:

This practice summary was prepared by Heather Cassie, CSO Research Fellow. If you have any queries, please contact Heather either by telephone or email. Tel: (01382) 740954 Email: h.c.cassie@dundee.ac.uk

Appendix 14: Mapping Key Concepts to the Organisational Climate Measure Instrument

Themes from Literature Review: Communication; Teamwork; Flexibility; Guidance Prioritisation; Collaboration; Guidance Dissemination; Expectations

Additional themes from Interviews: Context; Leadership; Practice Systems and Learning

1 = definitely false; 2 = mostly false; 3 = mostly true; 4 = definitely true

Q1	**AUTONOMY**					
Leadership	a. The principal dentist(s) lets team members make their own decisions	1	2	3	4	
Leadership	b. The principal dentist(s) trusts team members to take work-related decisions without getting permission first	1	2	3	4	
Leadership	c. Supervisors tightly control the work of those below them	1	2	3	4	
Leadership	d. The principal dentist(s) keeps too tight a reign on the way things are done	1	2	3	4	
Leadership	e. It is important to check things first with the principal dentist(s) before taking action	1	2	3	4	
Q2	**INTEGRATION**					
Teamwork Collaboration	a. Team members are suspicious of those in other professional roles within this dental team	1	2	3	4	
Teamwork Collaboration	b. There is very little conflict within this dental team	1	2	3	4	
Teamwork Collaboration	c. Those with different professional roles are prepared to share information	1	2	3	4	
Teamwork Collaboration	d. Collaboration between those with different professional roles is very effective	1	2	3	4	
Teamwork Collaboration	e. There is very little respect within this dental team	1	2	3	4	
Q3	**INVOLVEMENT**					
Communication Leadership	a. The principal dentist(s) involves team members when decisions are made that affect them	1	2	3	4	
Communication Leadership	b. Changes are made without talking to the team members involved in them	1	2	3	4	
Communication Leadership	c. Team members do not have any say in decisions that affect their work	1	2	3	4	
Communication Leadership	d. Team members feel that decisions are frequently made over their heads	1	2	3	4	
Communication Leadership	e. Information is widely shared	1	2	3	4	
Communication Leadership	f. There are often breakdowns in communication	1	2	3	4	

1 = definitely false; 2 = mostly false; 3 = mostly true; 4 = definitely true

Q4 TRAINING

Practice systems & learning	a. Team members are not properly trained when there is new guidance	1	2	3	4
Practice systems & learning	b. Team members receive enough training when there is new guidance	1	2	3	4
Practice systems & learning	c. This practice only gives team members the minimum amount of training they need to do their iob	1	2	3	4
Practice systems & learning	d. Team members are strongly encouraged to develop their skills	1	2	3	4

Q5 SUPERVISORY SUPPORT

Leadership	a. Senior team members are really good at understanding team members' problems	1	2	3	4
Leadership	b. Senior team members show that they have confidence in those they manage	1	2	3	4
Leadership	c. Senior team members are friendly and easy to approach	1	2	3	4
Leadership	d. Senior team members can be relied upon to give guidance to team members	1	2	3	4
Leadership	e. Senior team members show an understanding of the people who work for them	1	2	3	4

Q6 WELFARE

Context Leadership	a. This practice pays little attention to the interest of the employees	1	2	3	4
Context Leadership	b. This practice tries to look after its employees	1	2	3	4
Context Leadership	c. This practice cares about its employees	1	2	3	4
Context Leadership	d. This practices tries to be fair in its actions towards employees	1	2	3	4

Q7 EFFICIENCY

Teamwork Leadership	a. Time and money could be saved if work were better organised	1	2	3	4
Teamwork Leadership	b. Things could be done much more efficiently, if people stopped to think	1	2	3	4
Teamwork Leadership	c. Poor scheduling and planning is often an issue for delivery of care	1	2	3	4
Teamwork Leadership	d. Productivity could be improved if jobs were organised and planned better	1	2	3	4

1 = definitely false; 2 = mostly false; 3 = mostly true; 4 = definitely true

Q8	**TRADITION**				
Flexibility Context	a. The principal dentist(s) likes to keep to established, traditional ways of doing things	1	2	3	4
Flexibility Context	b. The way this practice does things has seldom changed	1	2	3	4
Flexibility Leadership	c. The principal dentist is not interested in trying out new ideas	1	2	3	4
Flexibility Context	d. Changes in the way things are done happen very slowly	1	2	3	4
Q9	**QUALITY**				
Expectations Context	a. This practice is always looking to achieve the highest standards of care	1	2	3	4
Expectations Context	b. Quality is taken very seriously	1	2	3	4
Expectations Context	c. Team members' believe that this practice's success depends on high quality care	1	2	3	4
Expectations Context	d. This practice does not have much of a reputation for high quality care	1	2	3	4
Q10	**FORMALISATION**				
Expectations Context Flexibility	a. It is considered extremely important to follow the rules	1	2	3	4
Expectations Context Flexibility	b. Team members can ignore formal procedures and rules if it helps get the job done	1	2	3	4
Expectations Context Flexibility	c. Everything has to be done by the book	1	2	3	4
Expectations Context Flexibility	d. It is not necessary to follow the rules to the letter	1	2	3	4
Expectations Context Flexibility	e. Nobody gets too upset if team members break the rules	1	2	3	4
Q11	**INNOVATION & FLEXIBILITY**				
Flexibility	a. New ideas are readily accepted	1	2	3	4
Flexibility	b. This practice is quick to respond when changes need to be made	1	2	3	4
Flexibility	c. Senior team members here are quick to spot the need to do things differently	1	2	3	4
Flexibility	d. This practice is very flexible: it can quickly change procedures to follow new guidance or regulations	1	2	3	4
Teamwork Flexibility	e. Assistance in developing new ideas is readily available	1	2	3	4
Flexibility	f. Team members are always searching for new ways of looking at problems	1	2	3	4

1 = definitely false; 2 = mostly false; 3 = mostly true; 4 = definitely true

Q12 OUTWARD FOCUS

Collaboration Practice systems & learning	a. This practice is quite inward looking: it does not concern itself with what is happening elsewhere	1	2	3	4
Collaboration Practice systems & learning	b. Ways of improving patients' satisfaction are not given much thought	1	2	3	4
Collaboration Practice systems & learning	c. Patients are not considered the top priority	1	2	3	4
Collaboration Practice systems & learning	d. This practice is slow to respond to the needs of the patient	1	2	3	4
Collaboration Practice systems & learning	e. This practice is continually looking for new opportunities	1	2	3	4

Q13 REFLEXIVITY

Teamwork Flexibility	a. The way team members work together is readily changed in order to improve performance	1	2	3	4
Flexibility Communication Practice systems & learning	b. The methods used by the practice to get the job done are often discussed	1	2	3	4
Communication Practice systems & learning	c. There are regular discussions as to whether team members are working effectively together	1	2	3	4
Flexibility	d. Plans are modified in light of changing circumstances	1	2	3	4
Communication Practice systems & learning	e. Time is taken to review the practice objectives	1	2	3	4

Q14 CLARITY OF ORGANISATIONAL GOALS

Communication	a. Team members have a good understanding of what this practice is trying to do	1	2	3	4
Communication	b. The future direction of this practice is clearly communicated to everyone	1	2	3	4
Communication	c. Team members are not clear about the aims of this practice	1	2	3	4
Communication	d. Everyone who works here is well aware of the long-term plans and direction of the practice	1	2	3	4
Communication	e. There is a strong sense of where the practice is going	1	2	3	4

1 = definitely false; 2 = mostly false; 3 = mostly true; 4 = definitely true

Q15 EFFORT

Teamwork	a. Team members always want to perform to the best of their ability	1	2	3	4
Teamwork	b. Team members are enthusiastic about their work	1	2	3	4
Teamwork	c. Team members get by with doing as little as possible	1	2	3	4
Teamwork	d. Team members are prepared to make a special effort to do a good job	1	2	3	4
Teamwork	e. Team members do not put more effort into their work than they have to	1	2	3	4

Q16 PERFORMANCE FEEDBACK

Collaboration Practice systems & learning	a. Team members usually receive feedback on the quality of their work	1	2	3	4
Collaboration Practice systems & learning	b. Team members do not have any idea how well they are doing their job	1	2	3	4
Collaboration Practice systems & learning	c. In general, it is hard for someone to measure the quality of their performance	1	2	3	4
Collaboration Practice systems & learning	d. Team members' performance is measured on a regular basis	1	2	3	4
Collaboration Practice systems & learning	e. The way team members do their job is rarely assessed	1	2	3	4

Q17 PRESSURE TO PRODUCE

Expectations	a. Team members are expected to do too much in a day	1	2	3	4
Expectations	b. In general, workloads are not particularly demanding	1	2	3	4
Expectations	c. Senior team members require team members to work extremely hard	1	2	3	4
Expectations	d. Team members are under pressure to meet targets	1	2	3	4
Expectations	e. The pace of work is really relaxed	1	2	3	4

Q18 GUIDANCE DISSEMINATION

Communication Dissemination	a. In this practice, senior team members make others aware of new guidance	1	2	3	4
Communication Dissemination	b. In this practice, we have regular meetings to discuss new guidance	1	2	3	4
Communication Dissemination	c. In this practice, we use web-based guidance packages and other innovative guidance formats	1	2	3	4

Q19 PRIORITISATION

Prioritisation Leadership Context	a. Senior team members decide what guidance documents this practice will follow	1	2	3	4
Prioritisation Leadership Context	b. Individual team members are free to decide what guidance documents they follow	1	2	3	4
Prioritisation	c. The ease of following a recommendation influences whether this practice would implement it	1	2	3	4
Prioritisation Context	d. The guidance topic influences whether this practice would implement it	1	2	3	4

Appendix 15: Pilot Questionnaire

TRiaDS
Translation Research in a Dental Setting

Scottish Dental Clinical Effectiveness Programme
SDCEP

Improving Quality in General Dental Practice

Dental Team Questionnaire

PILOT STUDY

January 2013

Scottish Dental PBRN
Reflecting Practice

Section 1: Your views

Please score the following statements on a scale of 1-4 circling the number you feel most accurately reflects *your dental team.*

1 = definitely false; 2 = mostly false; 3 = mostly true; 4 = definitely true

Q1 AUTONOMY

a. The principal dentist(s) lets team members make their own decisions	1	2	3	4
b. The principal dentist(s) trusts team members to take work-related decisions without getting permission first	1	2	3	4
c. Supervisors tightly control the work of those below them	1	2	3	4
d. The principal dentist(s) keeps too tight a rein on the way things are done	1	2	3	4
e. It is important to check things first with the principal dentist(s) before taking action	1	2	3	4

Q2 INTEGRATION

a. Team members are suspicious of those in other professional roles within this dental team	1	2	3	4
b. There is very little conflict within this dental team	1	2	3	4
c. Those with different professional roles are prepared to share information	1	2	3	4
d. Collaboration between those with different professional roles is very effective	1	2	3	4
e. There is very little respect within this dental team	1	2	3	4

Q3 INVOLVEMENT

a. The principal dentist(s) involves team members when decisions are made that affect them	1	2	3	4
b. Changes are made without talking to the team members involved in them	1	2	3	4
c. Team members do not have any say in decisions that affect their work	1	2	3	4
d. Team members feel that decisions are frequently made over their heads	1	2	3	4
e. Information is widely shared	1	2	3	4
f. There are often breakdowns in communication	1	2	3	4

1 = definitely false; 2 = mostly false; 3 = mostly true; 4 = definitely true

Q4 TRAINING

a. Team members are not properly trained when there is new guidance	1	2	3	4
b. Team members receive enough training when there is new guidance	1	2	3	4
c. This practice only gives team members the minimum amount of training they need to do their job	1	2	3	4
d. Team members are strongly encouraged to develop their skills	1	2	3	4

Q5 SUPERVISORY SUPPORT

a. Senior team members are good at understanding team members' problems	1	2	3	4
b. Senior team members show that they have confidence in those they manage	1	2	3	4
c. Senior team members are friendly and easy to approach	1	2	3	4
d. Senior team members can be relied upon to give guidance to team members	1	2	3	4
e. Senior team members show an understanding of the people who work for them	1	2	3	4

Q6 WELFARE

a. This practice pays little attention to the interest of the employees	1	2	3	4
b. This practice tries to look after its employees	1	2	3	4
c. This practice cares about its employees	1	2	3	4
d. This practices tries to be fair in its actions towards employees	1	2	3	4

Q7 EFFICIENCY

a. Time and money could be saved if work were better organised	1	2	3	4
b. Things could be done much more efficiently, if people stopped to think	1	2	3	4
c. Poor scheduling and planning is often an issue for delivery of care	1	2	3	4
d. Productivity could be improved if jobs were organised and planned better	1	2	3	4

1 = definitely false; 2 = mostly false; 3 = mostly true; 4 = definitely true

Q8 TRADITION

a. The principal dentist(s) likes to keep to established, traditional ways of doing things	1	2	3	4
b. The way this practice does things has seldom changed	1	2	3	4
c. The principal dentist is not interested in trying out new ideas	1	2	3	4
d. Changes in the way things are done happen very slowly	1	2	3	4

Q9 QUALITY

a. This practice is always looking to achieve the highest standards of care	1	2	3	4
b. Quality is taken very seriously	1	2	3	4
c. Team members believe that this practice's success depends on high quality care	1	2	3	4
d. This practice does not have much of a reputation for high quality care	1	2	3	4

Q10 FORMALISATION

a. It is considered extremely important to follow the rules	1	2	3	4
b. Team members can ignore formal procedures and rules if it helps get the job done	1	2	3	4
c. Everything has to be done by the book	1	2	3	4
d. It is not necessary to follow the rules to the letter	1	2	3	4
e. Nobody gets too upset if team members break the rules	1	2	3	4

Q11 INNOVATION & FLEXIBILITY

a. New ideas are readily accepted	1	2	3	4
b. This practice is quick to respond when changes need to be made	1	2	3	4
c. Senior team members here are quick to spot the need to do things differently	1	2	3	4
d. This practice is very flexible: it can quickly change procedures to follow new guidance or regulations	1	2	3	4
e. Assistance in developing new ideas is readily available	1	2	3	4
f. Team members are always searching for new ways of looking at problems	1	2	3	4

Q12 OUTWARD FOCUS

a.	This practice is quite inward looking: it does not concern itself with what is happening elsewhere	1	2	3	4
b.	Ways of improving patients' satisfaction are not given much thought	1	2	3	4
c.	Patients are not considered the top priority	1	2	3	4
d.	This practice is slow to respond to the needs of the patient	1	2	3	4
e.	This practice is continually looking for new opportunities	1	2	3	4

Q13 REFLEXIVITY

a.	The way team members work together is readily changed in order to improve performance	1	2	3	4
b.	The methods used by the practice to get the job done are often discussed	1	2	3	4
c.	There are regular discussions as to whether team members are working effectively together	1	2	3	4
d.	Plans are modified in light of changing circumstances	1	2	3	4
e.	Time is taken to review the practice objectives	1	2	3	4

Q14 CLARITY OF ORGANISATIONAL GOALS

a.	Team members have a good understanding of what this practice is trying to do	1	2	3	4
b.	The future direction of this practice is clearly communicated to everyone	1	2	3	4
c.	Team members are not clear about the aims of this practice	1	2	3	4
d.	Everyone who works here is well aware of the long-term plans and direction of the practice	1	2	3	4
e.	There is a strong sense of where the practice is going	1	2	3	4

Q15 EFFORT

a.	Team members always want to perform to the best of their ability	1	2	3	4
b.	Team members are enthusiastic about their work	1	2	3	4
c.	Team members get by with doing as little as possible	1	2	3	4
d.	Team members are prepared to make a special effort to do a good job	1	2	3	4
e.	Team members do not put more effort into their work than they have to	1	2	3	4

Q16 PERFORMANCE FEEDBACK

a. Team members receive feedback on the quality of their work	1	2	3	4
b. Team members have no idea how well they are doing their job	1	2	3	4
c. In general, it is hard for someone to measure the quality of their performance	1	2	3	4
d. Team members' performance is measured on a regular basis	1	2	3	4
e. The way team members do their job is rarely assessed	1	2	3	4

Q17 PRESSURE TO PRODUCE

a. Team members are expected to do too much in a day	1	2	3	4
b. In general, workloads are not particularly demanding	1	2	3	4
c. Senior team members require team members to work extremely hard	1	2	3	4
d. Team members are under pressure to meet targets	1	2	3	4
e. The pace of work is really relaxed	1	2	3	4

Q18 GUIDANCE DISSEMINATION

a. In this practice, senior team members make other team members aware of new guidance	1	2	3	4
b. In this practice, there are regular meetings to discuss new guidance	1	2	3	4
c. In this practice, web-based guidance and other innovative guidance disseminations are used (e.g. mobile phone apps)	1	2	3	4

Q19 GUIDANCE PRIORITISATION

a. Senior team members decide what guidance this practice follows	1	2	3	4
b. Individual team members are free to decide what guidance they follow	1	2	3	4
c. The ease of complying with guidance influences whether this practice follows it	1	2	3	4
d. The guidance topic influences whether this practice follows it	1	2	3	4
e. In this practice, there are regular meetings to discuss how to prioritise new guidance	1	2	3	4

Section 2: Use of Guidance in Your Practice

Q1 Emergency Dental Care

In this practice, if a patient…

a.	phones with a dental problem asking for emergency or unscheduled attention, there is a procedure that is followed	☐	Always	☐	Sometimes	☐	Never	☐	Don't Know
b.	contacts the practice when it is closed there are arrangements in place for them to obtain advice or care	☐	Always	☐	Sometimes	☐	Never	☐	Don't Know
c.	phones the practice complaining of dental trauma, the patient is contacted by a clinician within 60 minutes	☐	Always	☐	Sometimes	☐	Never	☐	Don't Know
d.	phones the practice complaining of facial swelling that is significant or worsening the patient is contacted by a clinician within 60 minutes	☐	Always	☐	Sometimes	☐	Never	☐	Don't Know

Q2 Oral Health Assessment & Review

In this practice…

a.	a head and neck assessment is conducted and recorded for patients	☐	Always	☐	Sometimes	☐	Never	☐	Don't Know
b.	caries and restorations are assessed and recorded for patients	☐	Always	☐	Sometimes	☐	Never	☐	Don't Know
c.	a risk-based recall interval is assigned for patients	☐	Always	☐	Sometimes	☐	Never	☐	Don't Know
d.	A long term personal care plan is written for patients	☐	Always	☐	Sometimes	☐	Never	☐	Don't Know

Q3 Drug Prescribing

In this practice, if a patient presents with a dental abscess, in the first instance …

a.	the patient is treated with local measures	☐	Always	☐	Sometimes	☐	Never	☐	Don't Know
b.	the patient is prescribed a first line antibiotic *(e.g. amoxicillin, phenoxymethylpenicillin, metronidazole, erythromycin)*	☐	Always	☐	Sometimes	☐	Never	☐	Don't Know
c.	the patient is prescribed a second line antibiotic *(e.g. clindamycin, co-amoxiclav, clarithroymicin*	☐	Always	☐	Sometimes	☐	Never	☐	Don't Know
d.	The antibiotic of choice and dosage would be					☐	Don't Know

Section 3: About you and your practice

Please answer the following questions in relation to this dental practice only

Q1 What is your role within this practice? *Please tick all that apply*

- ☐ Principal Dentist
- ☐ Associate Dentist
- ☐ Vocational Trainer
- ☐ Assistant
- ☐ Dental Nurse
- ☐ Practice Manager
- ☐ Dental Hygienist
- ☐ Extended Duty Nurse
- ☐ Receptionist
- ☐ Vocational Trainee
- ☐ Other *(please specify)* _____

Q2 How many of the following are there in your practice team?

(Please write the number of people undertaking that role in the box. If there is no one in that role please put a '0'in the box)

- ☐ Principal Dentist
- ☐ Associate Dentist
- ☐ Vocational Trainer
- ☐ Assistant
- ☐ Dental Nurse
- ☐ Practice Manager
- ☐ Dental Hygienist
- ☐ Extended Duty Nurse
- ☐ Receptionist
- ☐ Vocational Trainee
- ☐ Other *(please specify)* _____

Q3 If there is no Practice Manager, does someone else fill the role? ☐ Yes ☐ No

Who (e.g. dental nurse, dentist)? _____

Q4 Is this practice? ☐ Fully NHS ☐ Fully Private ☐ A mixture

Q5 Do you have access to the internet in your practice? ☐ Yes ☐ No

Q6 Does the practice have a computerised patient management system? ☐ Yes ☐ No

Section 4: Additional Comments

Please provide any additional comments in relation to the use of guidance in your practice:

Please provide any additional comments in relation to any other aspects of this questionnaire:

Thank you for completing this questionnaire. Please return your completed questionnaire in the sealed envelope provided and hand it to the nominated person in your practice.

Otherwise please return it to:

FREEPOST
License RSSH-ETXY-ZKBL, SDPBRN (Improving Quality in General Dental Practice)
Dundee Dental Education Centre, Frankland Building, Small's Wynd, Dundee, DD1 4HN.

Appendix 16: Pre-Questionnaire Letter

Dear

Improving Quality in Healthcare: Dental Team Questionnaire

TWO HOURS OF VERIFIABLE CPD AVAILABLE

The Scottish Dental Clinical Effectiveness Programme (SDCEP) in collaboration with the Scottish Dental Practice Based Research Network (SDPBRN) are inviting your practice to take part in a study to explore how the organisational characteristics of dental practices influence the implementation of guidance. The aim is to support dental teams by informing the development of appropriate support tools and education for general dental practice.

Questionnaires will be sent to your practice in the next few weeks, with full details provided in an accompanying information sheet, but essentially the study will involve yourself and your dental team completing a questionnaire which should take approximately 15 minutes. All team members who return the completed questionnaire and take part in a practice meeting to discuss the study findings will be awarded 2 hours of verifiable CPD.

The study is being led by Heather Cassie, CSO Research Fellow and supported by Professor Jan Clarkson and Dr Linda Young.

Taking part in this study will give you a real opportunity to inform the development and implementation of dental clinical guidance and we hope you will feel able to help.

If you would like more information, or if you would prefer not to take part on this occasion, please contact Heather Cassie by Monday 8th April 2013. Tel: 01382 740954; Email: h.c.cassie@dundee.ac.uk

Yours sincerely,

Heather Cassie
CSO Research Fellow

Jan Clarkson
Programme Director, SDCEP

Appendix 17: Final Dental Team Questionnaire

Improving Quality in General Dental Practice

Dental Team Questionnaire

Thank you for completing this questionnaire. We appreciate that you may work in more than one dental practice but please answer the following questions based on this practice only. Most of the questions require you to tick a box or circle a number. There are also text boxes in the questionnaire, which we hope you will use, where you can comment further on your answers.

Please be assured that the confidentiality of your data is a prime consideration of this study and all information will be held in the strictest confidence. All data will be managed in accordance with the Data Protection Act, 1998

If you have any questions or would like additional copies of the questionnaire please contact Heather Cassie, CSO Research Fellow. Tel: (01382) 740954 Email: h.c.cassie@dundee.ac.uk

Section 1: About you and your practice

Q1 How many of the following are there in your practice team? ***(Please write the number of people undertaking that role in the box, including yourself)***

☐ Principal Dentist	☐ Associate Dentist	☐ Salaried Dentist	☐ Vocational Trainee Dentist
☐ Assistant	☐ Dental Hygienist	☐ Dental Nurse	☐ Trainee Dental Nurse
☐ Practice Manager	☐ Receptionist	☐ Vocational Trainer	☐ Extended Duty Dental Nurse
☐ LDU Operator	☐ Other *(please specify)*	_____	

Q2 What is your role within this practice? ***(Please tick all that apply)***

☐ Principal Dentist	☐ Associate Dentist	☐ Salaried Dentist	☐ Vocational Trainee Dentist
☐ Assistant	☐ Dental Hygienist	☐ Dental Nurse	☐ Trainee Dental Nurse
☐ Practice Manager	☐ Receptionist	☐ Vocational Trainer	☐ Extended Duty Dental Nurse
☐ LDU Operator	☐ Practice Owner	☐ Other *(please specify)*	_____

Q3 How would you describe the ownership of this practice?

☐ Salaried Service ☐ Dental Body Corporate ☐ Independently Owned

Q4 Is this practice?

☐ Fully NHS ☐ Fully Private ☐ A Mixture

Q5 (a) If there is no Practice Manager, does someone else fill the role?? ☐ Yes ☐ No

(b) Who (e.g. dental nurse, dentist)? _____

Q6 Does this practice have a computerised patient management system? ☐ Yes ☐ No

Please provide any additional comments in relation to your practice:

Section 2: Your views

Please score the following statements on a scale of 1-4 circling the number you feel most accurately reflects *your dental team.*

1 = definitely false; 2 = mostly false; 3 = mostly true; 4 = definitely true

Q1 AUTONOMY

a. The principal dentist / clinical lead lets team members make their own decisions	1	2	3	4
b. The principal dentist / clinical lead trusts team members to make decisions without getting permission first	1	2	3	4
c. Supervisors tightly control the work of those below them	1	2	3	4
d. The principal dentist / clinical lead keeps too tight a rein on the way things are done	1	2	3	4
e. It is important to check things first with the principal dentist / clinical lead before taking action	1	2	3	4

Q2 INTEGRATION

a. Team members are suspicious of those in other professional roles within this dental team	1	2	3	4
b. There is very little conflict within this dental team	1	2	3	4
c. Those with different professional roles are prepared to share information	1	2	3	4
d. Collaboration between those with different professional roles is very effective	1	2	3	4
e. There is very little respect within this dental team	1	2	3	4

Q3 INVOLVEMENT

a. The principal dentist / clinical lead involves team members when decisions are made that affect them	1	2	3	4
b. Changes are made without talking to the team members affected by them	1	2	3	4
c. Team members do not have any say in decisions that affect their work	1	2	3	4
d. Team members feel that decisions are frequently made over their heads	1	2	3	4
e. Information is widely shared	1	2	3	4
f. There are often breakdowns in communication	1	2	3	4

Q4 TRAINING

a. Team members are not properly trained when there is new guidance	1	2	3	4
b. Team members receive enough training when there is new guidance	1	2	3	4
c. This practice only gives team members the minimum amount of training they need to do their job	1	2	3	4
d. Team members are strongly encouraged to develop their skills	1	2	3	4

Q5 SUPERVISORY SUPPORT

a. Senior team members are good at understanding team member's problems	1	2	3	4
b. Senior team members show that they have confidence in those they manage	1	2	3	4
c. Senior team members are friendly and easy to approach	1	2	3	4
d. Senior team members can be relied upon to give guidance to team members	1	2	3	4
e. Senior team members show an understanding of the people who work for them	1	2	3	4

Q6 WELFARE

a. This practice pays little attention to the welfare of the employees	1	2	3	4
b. This practice tries to look after its employees	1	2	3	4
c. This practice cares about its employees	1	2	3	4
d. This practices tries to be fair in its actions towards employees	1	2	3	4

Q7 EFFICIENCY

a. In this practice, time and money could be saved if work was better organised	1	2	3	4
b. Things could be done much more efficiently, if people stopped to think	1	2	3	4
c. Poor scheduling and planning is often an issue for delivery of care	1	2	3	4
d. Productivity could be improved if jobs were organised and planned better	1	2	3	4

Q8 TRADITION

a. The principal dentist / clinical lead likes to keep to established, traditional ways of doing things	1	2	3	4
b. The way this practice does things has seldom changed	1	2	3	4
c. The principal dentist / clinical lead is not interested in trying out new ideas	1	2	3	4
d. Changes in the way things are done happen very slowly	1	2	3	4

Q9 QUALITY

a. This practice is always looking to achieve the highest quality of care	1	2	3	4
b. Quality of care is taken very seriously	1	2	3	4
c. Team members believe that this practice's success depends on high quality care	1	2	3	4
d. This practice does not have much of a reputation for high quality care	1	2	3	4

Q10 FORMALISATION

a. It is considered extremely important to follow procedures/practice policies	1	2	3	4
b. Team members can ignore formal procedures and practice policies if it helps get the job done	1	2	3	4
c. Everything has to be done by the book	1	2	3	4
d. It is not necessary to follow procedures/practice policies to the letter	1	2	3	4
e. Nobody gets too upset if team members break the rules	1	2	3	4

Q11 INNOVATION & FLEXIBILITY

a. In this practice, new ideas are readily accepted	1	2	3	4
b. This practice is quick to respond when changes need to be made	1	2	3	4
c. Senior team members here are quick to spot the need to do things differently	1	2	3	4
d. This practice is very flexible: it can quickly change procedures to follow new guidance or recommendations	1	2	3	4
e. Assistance in developing new ideas is readily available	1	2	3	4
f. Team members are always searching for new ways of looking at problems	1	2	3	4

Q12 OUTWARD FOCUS

a.	This practice is quite inward looking: it does not concern itself with what is happening elsewhere	1	2	3	4
b.	Ways of improving patients' satisfaction are not given much thought	1	2	3	4
c.	Patients are not considered the top priority	1	2	3	4
d.	This practice is slow to respond to the needs of patients	1	2	3	4
e.	This practice is continually looking for new opportunities	1	2	3	4

Q13 LEARNING & REFLECTION

a.	The way team members work together is readily changed in order to improve performance	1	2	3	4
b.	The methods used by the practice to get the job done are often discussed	1	2	3	4
c.	There are regular discussions as to whether team members are working effectively together	1	2	3	4
d.	Plans are modified in light of changing circumstances	1	2	3	4
e.	Time is taken to review the practice goals	1	2	3	4

Q14 CLARITY OF PRACTICE GOALS

a.	Team members have a good understanding of what this practice is trying to do	1	2	3	4
b.	The future direction of this practice is clearly communicated to everyone	1	2	3	4
c.	Team members are not clear about the goals of this practice	1	2	3	4
d.	Everyone who works here is well aware of the long-term goals and direction of the practice	1	2	3	4
e.	There is a strong sense of where the practice is going	1	2	3	4

Q15 EFFORT

a.	Team members always want to perform to the best of their ability	1	2	3	4
b.	Team members are enthusiastic about their work	1	2	3	4
c.	Team members get by with doing as little as possible	1	2	3	4
d.	Team members are prepared to make a special effort to do a good job	1	2	3	4
e.	Team members do not put more effort into their work than they have to	1	2	3	4

Q16 PERFORMANCE FEEDBACK

a. Team members receive feedback on the quality of their work	1	2	3	4
b. Team members have no idea how well they are doing their job	1	2	3	4
c. In general, it is hard for someone to measure the quality of their own performance	1	2	3	4
d. Team member's performance is measured on a regular basis	1	2	3	4
e. The way team members do their job is rarely assessed	1	2	3	4

Q17 PRESSURE TO PRODUCE

a. Team members are expected to do too much in a day	1	2	3	4
b. In general, workloads are not particularly demanding	1	2	3	4
c. Senior team members require team members to work extremely hard	1	2	3	4
d. Team members are under pressure to meet targets	1	2	3	4
e. The pace of work is really relaxed	1	2	3	4

Q18 GUIDANCE DISSEMINATION

a. In this practice, team members are up-to-date with new guidance and recommendations	1	2	3	4
b. In this practice, senior team members make other team members aware of new guidance	1	2	3	4
c. In this practice, there are regular meetings to discuss new guidance and recommendations	1	2	3	4

Q19 GUIDANCE PRIORITISATION

a. Senior team members decide what guidance this practice follows	1	2	3	4
b. Individual team members are free to decide what guidance they follow	1	2	3	4
c. The ease of complying with guidance influences whether this practice follows it	1	2	3	4
d. The guidance topic influences whether this practice follows it	1	2	3	4
e. In this practice, there are regular meetings to discuss how to prioritise new guidance	1	2	3	4

Section 3: Use of Guidance in Your Practice

Q1 Emergency Dental Care

If a patient contacts the practice…

a.	with a dental problem asking for emergency or unscheduled attention, there is a procedure that is followed	☐	Always	☐	Sometimes	☐	Never	☐ Don't Know	☐ n/a
b.	when it is closed there are arrangements in place for them to obtain care	☐	Always	☐	Sometimes	☐	Never	☐ Don't Know	☐ n/a
c.	complaining of dental trauma, a clinician will contact with the patient, either face to face or by telephone within 60 minutes	☐	Always	☐	Sometimes	☐	Never	☐ Don't Know	☐ n/a
d.	complaining of facial swelling a clinician will contact with the patient, either face to face or by telephone within 60 minutes	☐	Always	☐	Sometimes	☐	Never	☐ Don't Know	☐ n/a

Q2 Oral Health Assessment & Review

As part of a routine examination in this practice…

a.	a head and neck assessment is recorded for all **new** patients	☐	Always	☐	Sometimes	☐	Never	☐ Don't Know	☐ n/a
b.	caries and restorations are recorded for all **new** patients	☐	Always	☐	Sometimes	☐	Never	☐ Don't Know	☐ n/a
c.	a risk-based recall interval is assigned for **all** patients	☐	Always	☐	Sometimes	☐	Never	☐ Don't Know	☐ n/a
d.	a long term personal care plan is written for **all** patients	☐	Always	☐	Sometimes	☐	Never	☐ Don't Know	☐ n/a

Q3 Drug Prescribing

If a patient presents with a dental abscess, with no obvious signs of spreading infection, in the first instance …

a.	the patient is treated with local measures	☐	Always	☐	Sometimes	☐	Never	☐ Don't Know	☐ n/a
b.	the patient is prescribed a first line antibiotic *(e.g. amoxicillin, metronidazole, phenoxymethylpenicillin , erythromycin)*	☐	Always	☐	Sometimes	☐	Never	☐ Don't Know	☐ n/a
c.	the patient is prescribed a second line antibiotic *(e.g. clindamycin, co-amoxiclav, clarithroymicin)*	☐	Always	☐	Sometimes	☐	Never	☐ Don't Know	☐ n/a
d.	What would the antibiotic of choice and dosage be?	☐						☐ Don't Know	☐ n/a

Thank you for completing this questionnaire!

Appendix 18: Dental Team Questionnaire - Information Sheet

Improving Quality in Healthcare: Dental Team Questionnaire

Background
Research suggests that organisational factors may influence the implementation of clinical guidance. These organisational factors have not been investigated within a dental setting. Working in collaboration with the Scottish Dental Clinical Effectiveness Programme (SDCEP), the Scottish Dental Practice Based Research Network (SDPBRN) aims to improve the quality of the dental health of patients in Scotland. One piece of work that SDPBRN is facilitating is an exploration of the influence that organisational characteristics have on the implementation of guidance in practice.

Who is conducting this study?
The project is being led by Heather Cassie (CSO Research Fellow) and supported by Professor Jan Clarkson and Dr Linda Young.

How will the study findings benefit me and my team?
The findings of this survey will contribute towards the development of dental clinical guidance and inform the development of support tools and education for dental teams. .All dental team members who complete the questionnaire and participate in a practice meeting to discuss the study findings will be awarded 2 hours of verifiable CPD.

What will it involve?
Questionnaires will be sent to a nominated person within your practice who will be responsible for distributing these to team members. Questionnaires should take approximately 15 minutes to complete. When completed, that nominated person will return the questionnaires in a large freepost envelope which will be provided. Alternatively, team members can return their completed questionnaires independently using the smaller freepost envelope provided.

A short report containing the study findings will be distributed approximately one month after all questionnaires are returned. In order to be accredited with the 2 hours of CPD, team members must hold a practice meeting to discuss these findings.

Confidentiality
All data will be managed according to the Data Protection Act 1998. The confidentiality of your data is a prime consideration of this study and all information will be held in the strictest confidence.

How will the results of study be used?
Questionnaire data will be analysed and each participating practice will receive a summary of their practice's data. The findings may be published in a peer reviewed journal and will form part of an SDCEP researcher's PhD thesis. In addition, reports will be produced for SDCEP, NHS Education for Scotland, the Dental Quality Improvement Standards Group and the Chief Dental Officer.

Who can I contact if I have any questions?
If you have any questions or would like to discuss any aspect of the study in greater detail please contact Heather Cassie. Tel: 01382 740954; Email: h.c.cassie@dundee.ac.uk

Appendix 19: Dental Practice Organisation Measure (DPOM) – Instrument Responses

Based on valid responses and rounded to nearest %

** Questions which were reverse coded when creating an overall dimension score*

1. AUTONOMY	Definitely True (%)	Mostly True (%)	Mostly False (%)	Definitely False (%)	Mean	SD
a. The principal dentist /clinical lead lets team members make their own decisions	22	58	17	4	2.98	0.73
b. The principal dentist /clinical lead trusts team members to make decisions without getting permission first	21	55	20	5	2.92	0.76
c. Supervisors tightly control the work of those below*	9	42	35	15	2.44	0.85
d. The principal dentist /clinical lead keeps too tight a rein on the way things are done*	5	19	39	36	1.92	0.86
e. It is important to check things first with the principal dentist / clinical lead before taking action*	28	47	21	5	2.98	0.82
2. INTEGRATION						
a. Team members are suspicious of those in other professional roles within this dental team*	2	10	23	65	1.50	0.77
b. There is very little conflict between this dental team	40	34	18	7	3.08	0.93
c. Those with different professional roles are prepared to share information	49	43	6	2	3.40	0.68
d. Collaboration between those with different professional roles is very effective	46	46	7	0	3.39	0.63
e. There is very little respect within this dental team*	2	7	22	69	1.43	0.72

3. INVOLVEMENT	Definitely True (%)	Mostly True (%)	Mostly False (%)	Definitely False (%)	Mean	SD
a. The principal dentist / clinical lead involves team members when decisions are made that affect them	36	48	12	4	3.16	0.79
b. Changes are made without talking to team members affected by them*	4	20	37	39	1.90	0.87
c. Team members do not have any say in decisions that affect their work*	3	16	43	38	1.84	0.80
d. Team members feel that decisions are frequently made over their heads*	4	19	42	35	1.92	0.83
e. Information is widely shared	30	54	12	4	3.09	0.76
f. There are often breakdowns in communication*	8	21	48	23	2.13	0.86
4. TRAINING						
a. Team members are not properly trained when there is new guidance*	3	15	41	42	1.79	0.79
b. Team members receive enough training when there is new guidance	33	51	15	2	3.14	0.73
c. This practice only gives team members the minimum amount of training they need to do their job*	5	23	34	39	1.93	0.89
d. Team members are strongly encouraged to develop their skills	40	40	15	6	3.14	0.87

5. SUPERVISORY SUPPORT	Definitely True (%)	Mostly True (%)	Mostly False (%)	Definitely False (%)	Mean	SD
a. Senior team members are good at understanding team member's problems	32	54	12	1	3.17	0.69
b. Senior team members show that they have confidence in those they manage	35	56	9	1	3.23	0.66
c. Senior team members are friendly and easy to approach	47	46	6	1	3,40	0.63
d. Senior team members can be relied upon to give guidance to team members	47	45	7	2	3.36	0.69
e. Senior team members show an understanding of the people who work for them	40	51	8	2	3.28	0.68
6. WELFARE						
a. This practice pays little attention to the welfare of the employees*	4	12	26	58	1.62	0.85
b. This practice tries to look after its employees	55	35	8	3	3.41	0.75
c. This practice cares about its employees	55	35	7	3	3.42	0.75
d. This practice tries to be fair in its actions towards employees	54	36	8	2	3.41	0.73
7. EFFICIENCY						
a. In this practice, time and money could be saved if work was better organised*	13	36	37	14	2.48	0.89
b. Things could be done much more efficiently, if people stopped to think*	13	35	37	14	2.48	0.90
c. Poor scheduling and planning is often an issue for delivery of care*	8	16	43	33	1.98	0.90
d. Productivity could be improved if jobs were organised and planned better*	11	36	33	20	2.37	0.93

8. TRADITION	Definitely True (%)	Mostly True (%)	Mostly False (%)	Definitely False (%)	Mean	SD
a. The principal dentist / clinical lead likes to keep to established, traditional ways of doing things	11	32	47	11	2.60	0.80
b. The way this practice does things has seldom changed	6	37	45	13	2.35	0.77
c. The principal dentist / clinical lead is not interested in trying out new ideas	2	14	42	43	1.76	0.77
d. Changes in the way things are done happen very slowly	6	34	44	16	2.31	0.81
9. QUALITY						
a. This practice is always looking to achieve the highest quality of care	71	28	2	0	3.69	0.50
b. Quality of care is taken very seriously	78	20	2	0	3.75	0.50
c. Team members believe that this practice's success depends on high quality care	71	27	3	0	2.68	0.53
d. This practice does not have much of a reputation for high quality care*	1	6	17	77	1.30	0.60
10.FORMALISATION						
a. It is considered extremely important to follow procedures/practice policies	69	27	3	1	3.65	0.56
b. Team members can ignore formal procedures and practice policies if it helps get the job done*	3	9	26	63	1.51	0.77
c. Everything has to be done by the book	34	51	10	4	3.15	0.77
d. It is not necessary to follow procedure/practice policies*	4	13	32	51	1.69	0.84
e. Nobody gets too upset if team members break the rules*	1	10	35	54	1.59	0.69

11.INNOVATION & FLEXIBILITY	Definitely True (%)	Mostly True (%)	Mostly False (%)	Definitely False (%)	Mean	SD
a. In this practice, new ideas are readily accepted	24	61	14	2	3.06	0.67
b. This practice is quick to respond when changes need to be made	33	51	14	3	3.14	0.74
c. Senior team members here are quick to spot the need to do things differently	21	59	17	3	2.99	0.71
d. This practice is very flexible; it can quickly change procedures to follow new guidance or recommendations	31	55	12	2	3.16	0.69
e. Assistance in developing new ideas is readily available	23	53	21	3	2.95	0.75
f. Team members are always searching for new ways of looking at problems	19	55	23	3	2.90	0.73
12.OUTWARD FOCUS						
a. This practice is quite inward looking: it does not concern itself with what is happening elsewhere*	4	27	42	28	2.05	0.83
b. Ways of improving patients' satisfaction are not given much thought*	1	11	36	52	1.61	0.72
c. Patients are not considered the top priority*	1	3	16	80	1.26	0.57
d. This practice is slow to respond to the needs of the patient*	0	5	26	69	1.36	0.57
e. This practice is continually looking for new opportunities	24	51	22	3	2.96	0.76

13.LEARNING & REFLECTION	Definitely True (%)	Mostly True (%)	Mostly False (%)	Definitely False (%)	Mean	SD
a. The way team members work together is readily changed in order to improve performance	16	59	22	3	2.89	0.69
b. The methods used by the practice to get the job done are often discussed	20	56	22	2	2.95	0.70
c. There are regular discussions as to whether team members are working effectively together	18	41	34	8	2.69	0.85
d. Plans are modified in light of changing circumstances	26	60	14	1	3.10	0.65
e. Time is taken to review practice goals	17	47	28	9	2.71	0.84
14.CLARITY OF PRACTICE GOALS						
a. Team members have a good understanding of what this practice is trying to do	34	49	14	3	3.14	0.76
b. The future direction of this practice is clearly communicated to everyone	23	42	29	6	2.82	0.86
c. Team members are not clear about the goals of this practice*	5	21	45	29	2.01	0.84
d. Everyone who works here is well aware of the long-terms goals and direction of the practice	20	43	32	6	2.77	0.83
e. There is a strong sense of where the practice is going	20	43	31	6	2.76	0.84

15.EFFORT	Definitely True (%)	Mostly True (%)	Mostly False (%)	Definitely False (%)	Mean	SD
a. Team members always want to perform to the best of their ability	49	45	5	1	3.42	0.63
b. Team members are enthusiastic about their work	35	56	8	1	3.25	0.65
c. Team members get by with doing as little as possible*	2	7	40	51	1.61	0.72
d. Team members are prepared to make a special effort to do a good job	37	53	9	1	3.25	0.67
e. Team members do not put more effort into their work than they have to*	3	17	38	42	1.81	0.83
16.PERFORMANCE FEEDBACK						
a. Team members receive feedback on the quality of their work	18	41	30	12	2.64	0.90
b. Team members have no idea how well they are doing their job*	8	24	41	27	2.13	0.90
c. In general, it is hard for someone to measure the quality of their own performance*	8	50	35	8	2.56	0.75
d. Team member's performance is measured on a regular basis	9	34	39	18	2.34	0.88
e. The way team members do their job is rarely assessed*	13	33	31	23	2.36	0.97

17.PRESSURE TO PRODUCE	Definitely True (%)	Mostly True (%)	Mostly False (%)	Definitely False (%)	Mean	SD
a. Team members are expected to do too much in a day	5	12	51	32	1.90	0.80
b. In general, workloads are not particularly demanding*	7	39	40	14	2.40	0.80
c. Senior team members require team members to work extremely hard	9	43	37	11	2.50	0.81
d. Team members are under pressure to meet targets	2	12	48	38	1.79	0.74
e. The pace of work is really relaxed*	8	48	35	10	2.53	0.77
18.GUIDANCE DISSEMINATION						
a. In this practice, team members are up-to-date with new guidance and recommendations	38	52	9	1	3.26	0.68
b. In this practice, senior team members make other team members aware of new guidance and recommendations	38	49	12	1	3.24	0.69
c. In this practice, there are regular meetings to discuss new guidance and recommendations	27	42	22	10	2.85	0.93
19.GUIDANCE PRIORITISATION						
a. Senior team members decide what guidance this practice follows*	41	46	10	3	3.26	0.76
b. Individual team members are free to decide what guidance they follow	1	11	39	49	1.63	0.71
c. The ease of complying with guidance influences whether this practice follows it*	4	30	30	36	2.02	0.92
d. The guidance topic influences whether this practice follows it*	6	28	30	35	2.06	0.94
e. In this practice, there are regular meetings to discuss how to prioritise new guidance	14	44	29	13	2.59	0.88

Appendix 20: Dental Practice Organisation Measure (DPOM) - Dimension Definitions

Definitions:
AUTONOMY: The extent to which jobs are designed to give team members wide scope to undertake their work
INTEGRATION: The extent of trust and co-operation between team members
INVOLVEMENT: The degree to which ideas are shared within the practice and team members are able to influence decision-making
TRAINING: There is a focus on developing team members' skills
SUPERVISORY SUPPORT: Team members experience support and understanding from their immediate supervisors
WELFARE: The extent to which the dental practice values and cares for team members
EFFICIENCY: The degree of importance placed on effective working and productivity
TRADITION: The extent to which established ways of doing things are valued
QUALITY: The emphasis the team places on standards of care
FORMALISATION: The degree of importance placed on rules and procedures
INNOVATION & FLEXIBILITY: The extent of orientation towards change, and new and novel approaches
OUTWARD FOCUS: The extent to which the practice is responsive to the needs of the patient
LEARNING AND REFLECTION: There is a focus on reviewing and considering practice objectives and procedures
CLARITY OF PRACTICE GOALS: The practice goals are clearly defined and communicated
EFFORT: How hard team members work towards achieving goals
PERFORMANCE FEEDBACK: The extent to which job performance is measured and fed back to team members
PRESSURE TO PRODUCE: The level of pressure/stress team members face to meet targets
GUIDANCE DISSEMINATION The extent to which new guidance and recommendations are communicated to team members
GUIDANCE PRIORITISATION The extent to which new guidance and recommendations are prioritised by team members

Appendix 21: Case Studies - Interview Schedule and Observation Guide

Interview Topic Guide:

1. **Researcher Introduction, brief summary of the study and describe purpose of the interview**

2. **Find out role of the team member and ask them to briefly describe what they see as their main roles/responsibilities.**
   - Ask them to describe a typical day if they are struggling...
   - What do you enjoy most?
   - What do you enjoy least? Any specific challenges?

3. **Clarify practice demographics based on questionnaire findings** *(if there was disagreement from team members in the questionnaire responses)*
   - Existence of Practice Manager
   - Practice size
   - Ownership of practice
   - NHS/Private/Mixture
   - Computerised patient management system
   - Any other relevant information?

4. **Using Practice Feedback Summary as a Prompt...**
   - Any comments on the practice's summary results?
   - Any surprises – why? Anything you expected – why?

5. **Guidance:**

a. Is there any guidance that you regularly refer to*? Which ones? Why? Try to ascertain why some guidance documents not others e.g. is it the guidance content? something else?*
b. When new or updated guidance/recommendations are published how would you normally become aware of it? – *actively looked for? passively received?*
c. How would you prefer to hear about/receive guidance?
d. How do others in the practice become aware of it? – *how is it communicated? practice meetings? copies made available?*
e. What would be the next steps? / How are recommendations put into practice?
f. Who would normally initiate/take responsibility for this? *Find out about the decision making process (individual or as a team), is there any prioritisation?*
g. What would your role be in this process?
h. Ask for examples of any new recommendations that have been put into practice? *How did it happen? Who did what?*
i. Are the changes monitored? How do you know if they are having any effect?
j. What would be the main factors that would influence whether new guidance is followed by you/your practice
k. What are the main barriers to implementing new guidance? *Does the guidance content influence this? Patients? External influences?*

6. **Communication:**

a. What methods of communication do you feel work well in your practice?
b. Are there any aspects you feel could be improved upon?

c. Do you have regular team meetings? If so, does one person take responsibility for these/take the lead?
d. What types of things would typically be discussed at a practice meeting? *New guidance? Methods of working?*
e. What methods do you use to keep in touch with patients? *Phone, letter, text, Facebook, Twitter, website, other?*
f. How are appointments made? *From visit to visit, reminder system?*

7. Training and Welfare

a. How much training are you able to participate in? What types of training?
b. Is there anything that influences (makes it easier or harder) for you to undertake training?
c. How much training are other team members able to participate in?
d. Is there anything that you think may influence (makes it easier or harder) other team members undertaking training?
e. Do you ever receive feedback on you how are doing? – Informal? Formal? Is this helpful/unhelpful?

8. Leadership:

a. Who would you describe as being the leader in your practice? Why? Do you think there is anyone else within the team providing leadership?
b. Who do you consider to be your line manager/boss?
c. Is that the person you would go to in the first instance?

9. Teamwork:

a. How would you best describe how your dental team work together?
b. Do members of the team have their own roles and responsibilities?
c. Is there anything that could be done more efficiently in your practice?

10. Other:

a. Can you think of an example of a recent change that has been made in your practice? *What was it? Why was it needed? What did it involve, who took the lead? Who else was involved? Was it successful? Why?*
b. Is there anything they would like to ask about or anything they feel I haven't covered?

Observations Guide:

First Impressions

1. Practice environment

- Neighbourhood/Surrounding area
- Practice Exterior
- Waiting Room (decoration, radio/tv, reading materials, children's toys)
- Staff Room
- Practice Interior (e.g. decoration)
- Welcome received by reception staff

2. Information provided

- Practice Leaflet
- Opening times displayed
- Contact information displayed
- Policies displayed (e.g. cancellation policy, out of hours information, charging information)
- Local information displayed (e.g. Local group meetings etc)
- Information displayed/available for patients (tooth brushing/dietary advice)
- Tooth brushing/other dental equipment for sale

3. Other

- Is there any evidence of practice involvement with other organisations? (e.g. accreditation/certificates displayed)
- Are there any indicators of best practice/quality?
- Do team members appear hard working, enthusiastic, conscientious?
- Do staff appear rushed, relaxed?

First Hour of the day:

- Do individuals appear to have clear roles/responsibilities? Who does what?
- How do team members interact?
- Is it organised/calm/rushed?
- Do there appear to be procedures that are followed during this time? Examples
- Do team members refer to any procedures/printed sheets etc?
- Does the practice open on time?
- Do the first patients wait long for their appointments?
- When is the mail dealt with? How is it handled/distributed?

Lunchtime:

- Do patient appointments run into lunchtime?
- What do team members do at lunchtime? (e.g. leave the premises, interact together in staff room)
- What types of things are discussed over lunchtime? Personal or work related?

Last hour of the day:

- Do individuals appear to have clear roles/responsibilities? Who does what?
- How do team members interact?
- Is it organised/calm/rushed?
- Do there appear to be procedures that are followed during this time? Examples
- Do team members refer to any procedures/printed sheets etc?
- Does the practice close on time?

Communication:

- How do team members communicate?
  - Within professional roles
  - Out with professional roles
  - With patients

  - With external suppliers/organisations
- Methods of communication? (e.g. face to face, internal messaging (R4), email, written notes etc.)
- Evidence of practice meetings (minutes of meetings/folders etc)
- Notice boards?
- Do team members know/understand why I am visiting the practice? Have they been briefed?

Atmosphere:
- Relationships between team members
- Patient attitudes (friendly with staff, annoyed if kept waiting for appointment etc)

Training:
- Does evidence of training exist? (e.g. training folders/manuals/ information on notice boards)

Innovations:
- Is there any evidence of the use of new technologies/innovations? (e.g. computer systems, use of tablets/mobile phones for work purposes) Examples
- Is there any evidence of new systems of working being introduced? Examples

Guidance:
- Are guidance documents visible? Where? Which ones?
- Is there any evidence of guidance being referred to?
- Are there any notes/laminated sheets based on guidance/recommendations?
- Do team members refer to any guidance or new recommendations?
- Is there any evidence of variation between guidance in terms of what has been fully implemented?

Administration/Policies:
- Evidence of practice inspection manuals/folders/SDCEP Practice Support Manual
- First aid information
- Fire safety information displayed?
- General policies/procedures on display
- How are patient notes managed?
- How are appointments made?
- Evidence of appointment reminder systems?